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New and interesting mites from the Geneva Museum LXIII. A survey of the Oribatid fauna of Senegal (Acari: Oribatida)

by

S. MAHUNKA*

With 102 figures

ABSTRACT

Thirty Oribatid species are enumerated from Senegal, fourteen of them are new to science, two also representing new genera: *Senilochthonius* gen. n. (*Haplochthoniidae*) and *Chaunoproctellus* gen. n. (*Chaunoproctidae*). Taxonomic investigations are presented concerning ther family *Haplochthoniidae* (partial redescription of *Haplochthonius simplex* Willmann, 1930 and *H. sanctaeluciae* Bernini, 1973, and description of a new species from Greece) and the "*areolata*"-group in the genus *Galumnella* (with the redescription of *G. subareolata* Mahunka, 1969), furthermore, the description of a new genus and species: *Trichogalumnella hauseri* gen. et sp. n. (Galumnidae) from Rhodesia is presented.

INTRODUCTION

My research aiming at the exploration of the Oribatid fauna of the Ethiopian Region were mostly concentrated to East, Central and South Africa, since no adequate material originating from West Africa was available. This is why I am especially grateful to Dr. B. Hauser, curator of the Arthropoda Collection, Muséum d'Histoire naturelle, Geneva, for his kindness in allowing me to study a large material from Senegal, during my stay in Geneva in 1985.

This material, collected by several collectors (R. Mussard, S. and P. Hainard, P. Strinati) at various times and collecting sites in Senegal, proved to be highly interesting and very rich, well beyond expectation. I have identified a total of 30 species, 14 of which are new to science, two also representing two new genera (*Senilochthonius: Haplochthoniidae*)

* Zoological Department, Hungarian Natural History Museum, Baross utca 13, H-1088 Budapest, Hungary.

and *Chaunoproctellus: Chaunoproctidae*). While studying this material several taxonomic problems have been encountered. Thus it was inevitable to revise all the taxa of *Haplochthoniidae*. The comparative studies revealed a new species, also representing a new genus, while two species are related to species known mostly from the Palaearctic Region. The species that I mentioned from Greece under the name *Haplochthonius simplex*, is in fact an independent, new species, whose description follows hereunder.

The description of a new species in the genus *Galumnella* also focused my attention to some problems; consequently, I had to revise the whole "*areolata*"-group. I give a redescription of *G. subareolata* Mahunka, 1969. The species mentioned by me as *G. areolata* Balogh, 1961 from Rhodesia, is in fact a new taxon, for which the establishment of a new genus is necessary.

Though the material is large, it is still insufficient for zoogeographical conclusions. Nevertheless, it is interesting to note that besides the Central African elements (*Allonothrus monodactylus*, *Africacarus calcaratus*) there ae also some species showing links with Palaearctic elements (*Haplochthonius sanctaeluciae*, *Medioppia subpectinata*, *Xylobates lophotrichus*).

In the descriptions I generally apply the terminology used in NORTON & BEHAN-PELLETIER (1986) based on Grandjean's work. Measurements given correspond to extremes observed in the present material; length is measured from the rostral apex to the furthermost opposite point of the body. The pilosity of the parts of the body and of the legs are expressed in formulae. The sequence of the anogenital formula is: number of genital, aggenital, anal and adanal setae.

LIST OF LOCALITIES

Se-72/1 = Sénégal, Rufisque (port 30 km de Dakar), au pied d'un Baobab (*Adansonia digitata*, Bombacacées), 21.II.1972. leg. R. Mussard.

Se-72/2 = Sénégal, Ziguinchor (Casamance), 12°30N. – 16°15W au Sud de la Gambie, 20.III.1972. leg. R. Mussard.

Se-72/3 = Sénégal, Rufisque (port 30 km de Dakar), vieux baobab pourri, tamisage et appareil Winkler, VII. 1972. leg. R. Mussard.

Sen-73/1 = Sénégal, Rufisque, 2.VII.1973. leg. P. Strinati.

Sen-76/1 = Sénégal, Casamance, Ziguinchor, sol sableux ferrugineux, forêt secondaire, env. 20 m, prélèvement de terre, 9.XI.1976. leg. S. et P. Hainard.

Sen-76/2 = Sénégal, Casamance, Ziguinchor, sol sableux ferrugineux, forêt à *Cola cordifolia*, env. 20 m, prélèvement de terre, 9.XI.1976, leg. S. et P. Hainard.

Sen-76/3 = Sénégal, Casamance, Ziguinchor, sol sableux-vaseux, salé, mangrove à *Avicennia nitida*, 9.XI.1976. leg. S. et P. Hainard.

Sen-77/1 = Sénégal, Nianing, baobab pourri, 1.V.1977. leg. R. Mussard.

Sen-77/2 = Sénégal, Rufisque, prélèvement de bois décomposé de baobab, 7.IX.1977. leg. R. Mussard.

Sen-77/3 = Sénégal, Nianing, bois pourri de baobab, 7.IX.1977. leg. R. Mussard.

Sen-77/4 = Sénégal, Nianing, (baobab pourri), 28.IX.1977. leg. R. Mussard.

Hel-75/1 = Péloponnèse: au bord de la route de Krestena à Andritsena, 230 m, prélèvement de terre sous *Acer monspessulanum*, 19.IV.1975. leg. B. Hauser.

The-76/25 = Grèce (Acarnanie): prélèvement de terre au pied de *Quercus* sp., près Astakos, 120 m, 15.V.1976, leg. B. Hauser.

Rho-69/1 = Rhodesia: Inyanga, Umtali, 27.II.1969, leg. R. Mussard.

LIST OF IDENTIFIED SPECIES

Haplochthoniidae van der Hammen, 1959

Senilochthonius baobab gen. n., sp. n.
Locality: Sen-77/3.
Haplochthonius graecus sp. n.
Localities: The-76/25, Hel-75/1.
Haplochthonius sanctaeluciae Bernini, 1973
Localities: Sen-76/2: 1 specimen, Sen-77/2: 2 specimens, Sen-77/3: 2 specimens, Sen-77/4: 2 specimens.
Haplochthonius simplex (Willmann, 1930)
Locality: Sen-77/3: 3 specimens.

Mesoplophoridae Ewing, 1917

Mesoplophora africana Balogh, 1958
Locality: Sen-76/1: 2 specimens.

Lohmanniidae Berlese, 1916

Torpacarus omittens Grandjean, 1950
Locality: Sen-76/1: 2 specimens.

Epilohmanniidae Oudemans, 1923

Epilohmannia pallida Wallwork, 1962
Locality: Sen-76/1: 2 specimens.

Nothridae Berlese, 1885

Nothrus senegalensis sp. n.
Locality: Sen-76/2.

Trhypochthoniidae Willmann, 1931

Allonothrus monodactylus Wallwork, 1960
Locality: Sen-76/2: 8 specimens.

Malaconothridae Berlese, 1916

Malaconothrus heterotrichus sp. n.
Locality: Sen-76/1.

Damaeolidae Grandjean, 1965

Fosseremus quadripertitus Grandjean, 1965
Locality: Sen-76/1: 1 specimen.

Oppiidae Grandjean, 1954

Graptoppia mussardi sp. n.
Localities: Sen-77/1, Sen-77/4.
Insculptoppia crenata sp. n.
Locality: Sen-76/2.
Karenella foveolata sp. n.
Locality: Sen-76/2.
Multioppia calcarata sp. n.
Locality: Sen-77/2.
Paroppia senegalensis (Mahunka, 1975)
Localities: Se-72/1: 15 specimens, Se-72/2: 1 specimen, Se-72/3: 8 specimens, Sen-77/1: 2 specimens, Sen-77/2: 1 specimen, Sen-77/3: 5 specimens.

Medioppia subpectinata (Oudemans, 1901)
Localities: Sen-77/3: 1 specimen, Sen-77/4: 2 specimens.
Oppiella nova (Oudemans, 1902)
Localities: Sen-73/1: 1 specimen, Sen-77/3: 3 specimens.
Uroppia hainardorum sp. n.
Locality: Sen-76/2.

Chaunoproctidae Balogh, 1961
Chaunoproctellus rugosus gen. n., sp. n.
Localities: Sen-77/1, Sen-77/2.

Oribatulidae Thor, 1929
Baobabula mussardi Mahunka, 1975
Localities: Se-72/1: 4 specimens, Se-72/3: 11 specimens.
Perscheloribates minimus sp. n.
Locality: Se-72/2.
Scheloribates exiguus sp. n.
Locality: Sen-76/3.
Scheloribates fimbriatus Thor, 1930
Locality: Sen-77/2: 10 specimens.
Scheloribates laevigatus (C.L. Koch, 1836)
Locality: Sen-77/3: 9 specimens.

Haplozetidae Grandjean, 1936
Xylobates lophotrichus (Berlese, 1904)
Locality: Sen-76/1: 2 specimens.

Ceratozetidae Jacot, 1925
Africacarus calcaratus Wallwork, 1965
Locality: Sen-77/3: 2 specimens.

Oribatellidae Jacot, 1925
Oribatella ceylanica (Oudemans, 1915)
Locality: Se-72/2: 1 specimen.

Galumnidae Jacot, 1925
Allogalumna sinornata sp. n.
Locality: Se-72/2.
Galumna coronata sp. n.
Locality: Se-72/2.
Galumnella apiculata sp. n.
Locality: Sen-76/1.
Trichogalumnella hauseri gen. n., sp. n.
Locality: Rho-69/1.

DESCRIPTIONS

The genus *Haplochthonius* Willmann, 1930

GRANDJEAN (1947) published a very good redescription of the genus in connection with his research on the system of the group *Enarthronota*. He examined two species which belong to this genus (*H. simplex* Willmann, 1930 and *H. sanctaeluciae* Bernini,

1973*) but he did not see the type specimens. BERNINI (1973), who described the second species, did not give any new data regarding the knowledge of the genus and he did not discuss the epimeral chaetotaxy. Since then some authors mentioned one of the two species, but no relevant data were disclosed.

Both species belong to a uncommon group, therefore, it was very unexpected, to find three *Haplochthonius* species in these small samples, and even, in one sample, all three together.

Because of the significant geographical distribution and the very special biotopes I compared these specimens with both species collected in the Mediterranean Region. I have found, that one species is unambiguously identical with *H. sanctaeluciae* and one species with *H. simplex* (sensu GRANDJEAN). The third specie stands very far from both preceding ones and the establishment of a new genus is inevitable for it.

I re-examined also a series of specimens which was published by me (MAHUNKA 1977, 1982b) under the name of *H. simplex* from Greece, however, they did not prove to be conspecific with GRANDJEAN's species, therefore, I describe it as a new species.

I examined in every case some of the important characters: the position of notogastral cupules, the epimeral and the anogenital chaetotaxy. I found, that among these species great differences exist:

	simplex (sensu Grandj.)	*graecus*	gen. n.	*sanctaeluciae*
form of not. setae	simple	simple	simple	widened
position of cupule	near	near	partly far	near
epimeral setal formula	3-2-3-4	3-2-3-3	3-2-3-3	3-2-2-3
number of genital setae	7	7	9	7

The variability of the epimeral setal formula is most remarkable and it querries the value of this character in other relatively primitive groups, as the family *Brachychthoniidae*.

The most important character is the number of the genital setae. On this ground it would be inconsequent to order the new species in the same genus, thus I establish a new genus.

Senilochthonius gen. n.

D i a g n o s i s : Family *Haplochthoniidae*. Habitus and notogastral chaetotaxy similar to that of the genus *Haplochthonius*. Notogastral cupules originating in some cases far from the median setae (in the case of setae d_1 and h_1). Epimeral setal formula: 3-2-3-3. Nine pairs of genital setae present. All legs with one claw.

T y p e s p e c i e s : *Senilochthonius baobab* sp. n.

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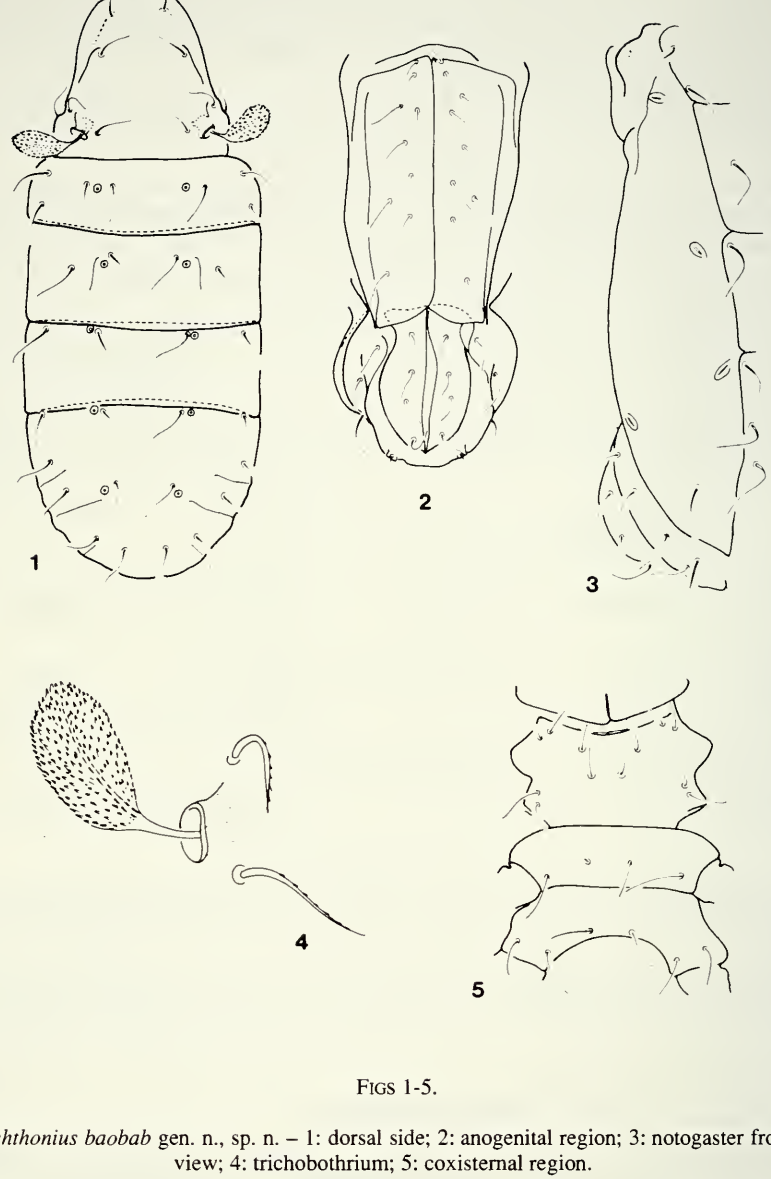
* At that time as "espèce de Sainte-Lucie": GRANDJEAN 1947.



FIGS 1-5.

Senilochthonius baobab gen. n., sp. n. – 1: dorsal side; 2: anogenital region; 3: notogaster from lateral view; 4: trichobothrium; 5: coxisternal region.

Senilochthonius baobab sp. n.

Measurements: – Length: 316 µm, width: 119 µm.

Prodorsum: Weakly chitinized, no transversal ridge between the rostral and in front of the lamellar setae. All prodorsal setae thin, but ciliate. Sensillus (Fig. 4)

comparatively short, flabellate, its laminate head wide, the surface spiculate. Both pairs of exoborthridial setae long, they are not shorter than the interlamellar ones, lamellar setae three times longer than the length of the exobothridial setae.

Notogaster: Cerotegument ornamented by very fine reticulation. All setae thin, comparatively short, their surface finely roughened; setae d_1 and e_1 not longer than half diameter of segments NM_1 or NM_2. The cupules originating far from setae c_1, d_1 and h_1, only at setae e_1 and f_1 they stand close to them (Fig. 1). Surface of tergites with some fine rugae, being stronger on the pygidium. Lateral margin of pygidium also waved.

Pleural region (Fig. 3): Apophysis *Te* well separated, but not high. Lyrifissures *im* an *ip* originating near to notogastral tergites.

Coxisternal region (Fig. 5): Epimeral setal formula: 3-2-3-3 (!). All setae long.

Anogenital region (Fig. 2): Anogenital setal formula: 9-0-4-4.

Material examined: Holotype: Sen-77/3. Holotype. MHNG[1].

Remarks: As I discussed previously this new species stands very far from any known *Haplochthonius* Willmann, 1930 species.

I give hereunder the description of the other examined species, being also new for science.

Haplochthonius graecus sp. n.

Measurements. – Length: 311-326 µm, width: 157-165 µm.

Prodorsum: Weakly chitinized, but a fine transversal line observable in the lamellar relgion. All setae simple, nearly equal in length. Sensillus flabellate, comparatively wide.

Notogaster (Fig. 6): Notogastral setae very short (d_1, e_1 39-45 µm) but stick-shaped, their surface finely roughened. Notogastral cupule originating – with the exception of one pair on *Na*-tergite – very near to the median setae.

Coxisternal region: Epimeral setal formula: 3-2-3-3. All setae simple (Fig. 9).

Anogenital region: As shown in Fig. 7.

Material examined: Holotype: The-76/25; 26 paratypes: from the same sample; 1 paratype: Hel-75/1. Holotype and 17 paratypes: MHNG, 9 paratypes (1156-PO-85): HNHM[2].

Remarks: The heretofore known *Haplochthonius* Willmann, 1930[3] species may be distinguished by the following key:

1 (2) Notogastral setae wide, setae an_1 also wider than other anal setae (Figs 12-14). *sanctaeluciae* Bernini, 1973

2 (1) Notogastral setae thin, filiform or stick-shaped. All anal setae similar to each other.

3 (4) Epimeral setal formula: 3-2-3-4, all setae long (Figs 15-20) *simplex* (Willmann, 1930) sensu Grandjean, 1946

4 (3) Epimeral setal formula: 3-2-3-3, all setae short *graecus* sp. n.

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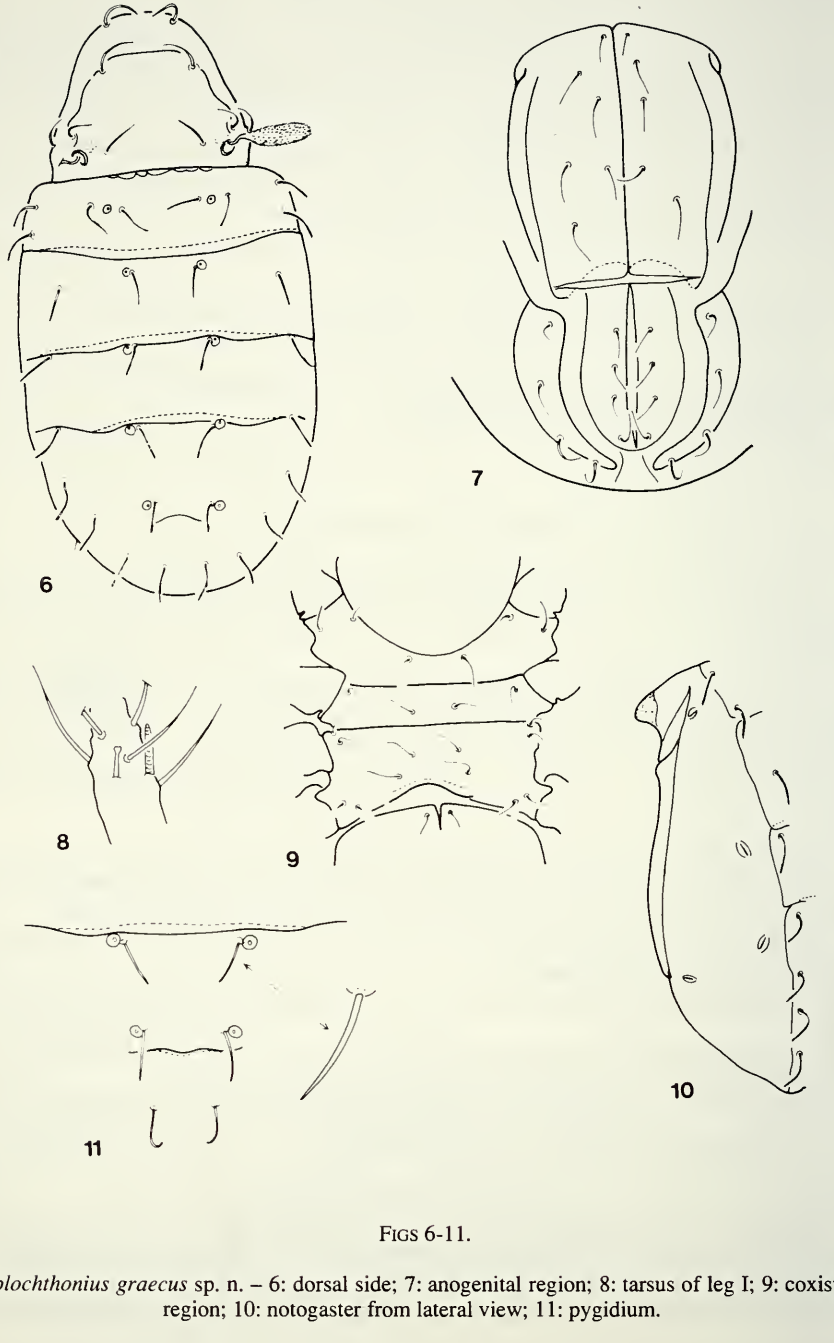
[1] MHNG = deposited in the Muséum d'Histoire naturelle, Genève.

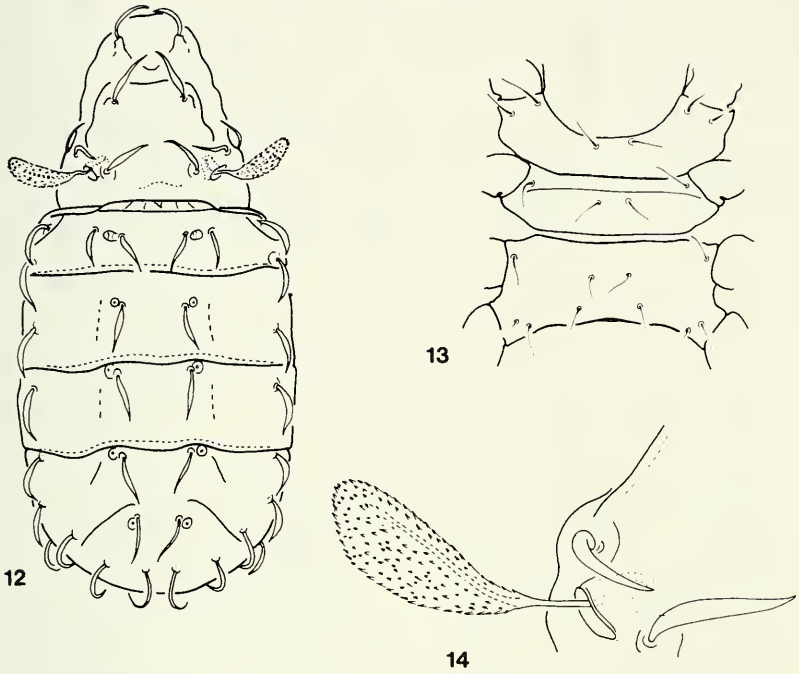
[2] HNHM = deposited in the Hungarian Natural History Museum, Budapest with identification number of the specimens in the Collection of Arachnida.

[3] I have not investigated the *Haplochthonius clavatus* (Hammer, 1958) from South America.



FIGS 6-11.

Haplochthonius graecus sp. n. – 6: dorsal side; 7: anogenital region; 8: tarsus of leg I; 9: coxisternal region; 10: notogaster from lateral view; 11: pygidium.



FIGS 12-14.

Haplochthonius sanctaeluciae Bernini, 1973 – 12: dorsal side; 13: coxisternal region; 14: trichobothrium.

Torpacarus omittens Grandjean, 1950

Measurements. – Length: 631-648 µm, width: 271-285 µm.

The specimens from Senegal are completely identical with the description and figures given by GRANDJEAN (1950), except some round areae porosae[1] arranged in transversal bands on the notogaster, which are absent on the South American specimens. But they are highly variable (Figs 21-22) and do not justify the separation of a new taxon. The sutures *mt*, *nt* or *pt* also vary.

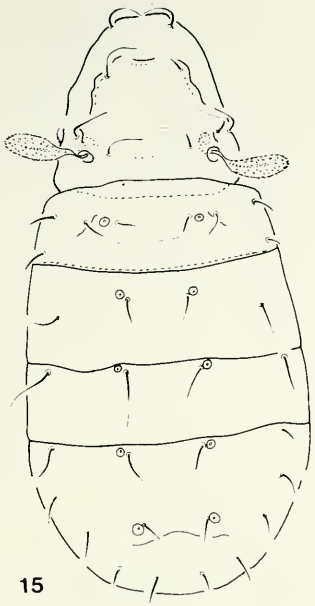
Examined material: Sen-76/1: 2 specimens.

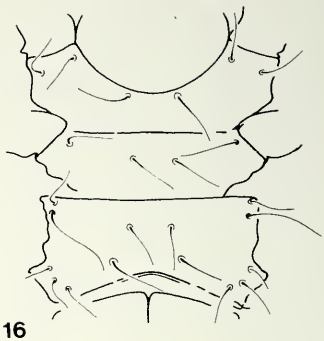
Nothrus senegalensis sp. n.

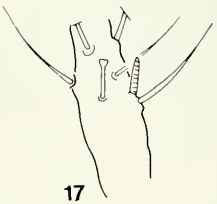
Measurements. – Length: 688-720 µm, width: 322-348 µm.

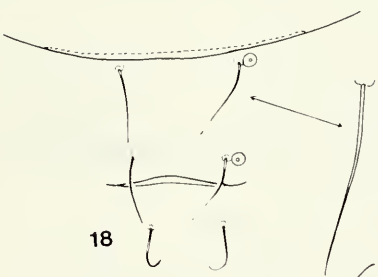
Prodorsum: Rostral and lamellar setae arising on tubercles connected by transversal laths. Both pairs of setae and the interlamellar ones also ciliate, spathulate.

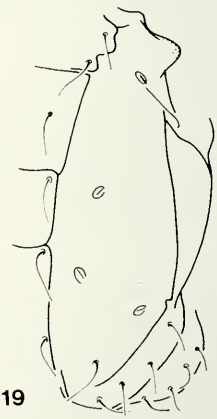
[1] WALLWORK (1962) also observed them on his specimen collected in Ghana.





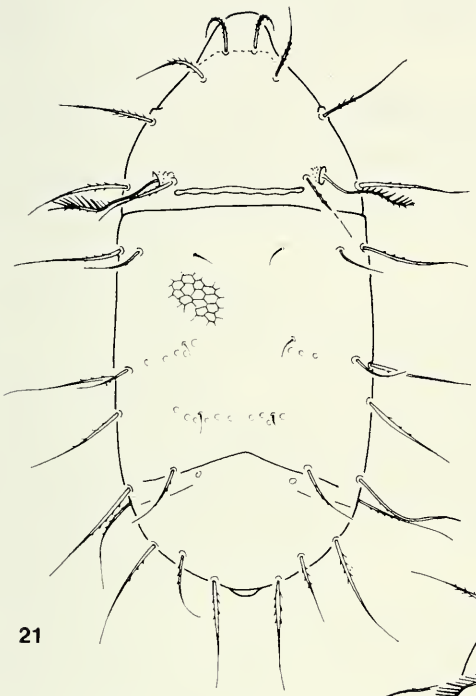


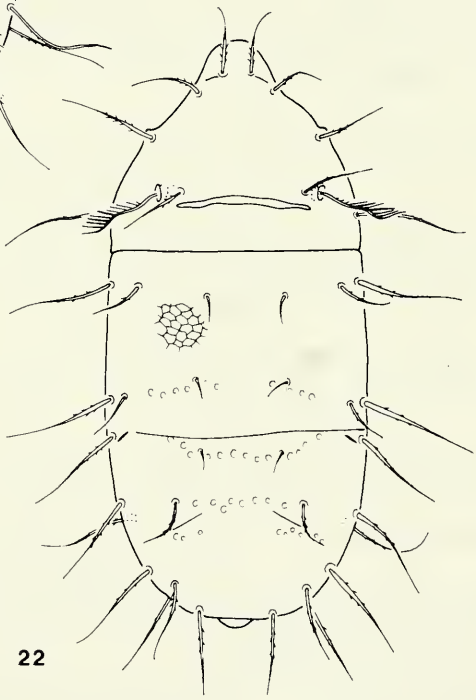




FIGS 15-20.

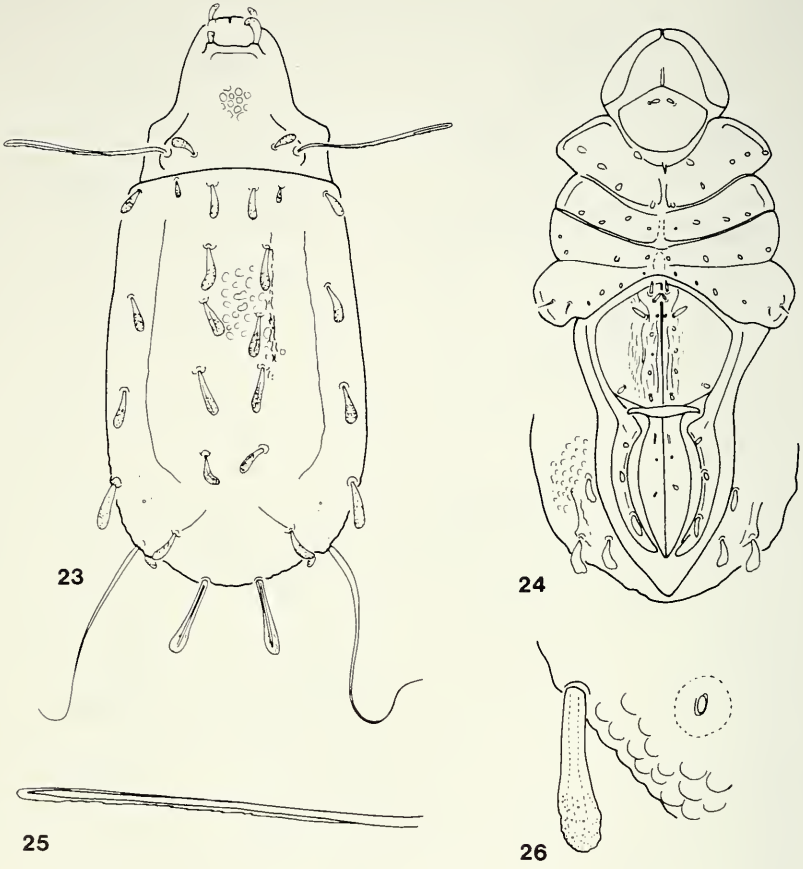
Haplochthonius simplex Willmann, 1930 – 15: dorsal side; 16: coxisternal region; 17: tarsus of leg I; 18: pygidium; 19: notogaster from lateral view; 20: trichobothrium.





FIGS 21-22.

Torpacarus omittens Grandjean, 1950 – 21-22: dorsal views of different specimens.



Figs 23-26.

Nothrus senegalensis sp. n. – 23: dorsal side; 24: ventral side; 25: distal end of sensillus; 26: notogastral seta.

Prodorsal surface areolate. Sensillus (Fig. 25) very long (240 μm), much longer than distance between bothridia.

N o t o g a s t e r : Surface also areolate, but laterally pustulate. Notogastral setae – with the exception of k_1 – also dilated (Fig. 26). Significant differences in their lengths (Fig. 23) exist: c_1 more than twice as long as c_2, p_1 (91 μm) nearly two and a half times longer than h_1. Setae h_2 (275 μm) thin, gradually narrowing distally, with a slightly flagellate end.

C o x i s t e r n a l r e g i o n : Epimeral setal formula: 5-4-4-6 (it was observable only in one specimen!). All setae more or less dilated.

Anogenital region: Inner margin of genital plates rugose, some larger longitudinal rugae also observable (Fig. 24). Genital setae also dilated. Two pairs of anal, three pairs of adanal setae present, all dilated, however, an_1 much larger than the others.

Legs: All legs monodactylous.

Material examined: Holotype: Sen-76/2; 1 paratype: from the same sample. Holotype: MHNG, paratype (1157-PO-85): HNHM.

Remarks: The new species belongs to the "*palustris*"-group, however, on the ground of the number of claws it stands nearest to *Nothrus mystax* Mahunka, 1985, but, the ratio of the notogastral setae in the latter one is different.

Malaconothrus heterotrichus sp. n.

Measurements. – Length: 414-429 µm, width: 182-200 µm.

Prodorsum: Rostral and lamellar setae thick, but rostral ones smooth and thinner than the latter. Interlamellar setae thinner but longer than sensillus, both pairs ciliate basally. Two pairs of ridges observable, one stronger around the bothridium, bending inwards, the other weaker, laterally, directed to lamellar setae. Some large foveolae visible basally and medially (Fig. 29). Pori *m* well visible, large, insertion of exobothridial setae scarcely observable.

Notogaster: All notogastral setae ciliate basally; with the exception of setae e_2, h_2 and ps_2 all short, dilated on their basal part (Fig. 27). Setae e_2, h_2 and ps_2 much longer than the others (Fig. 32). Lyrifissure *ip* opening always transversally.

Coxisternal region: Setae *h* slightly dilated, blunt. Epimeral setae different in lengths: setae *1c* minute, *1b* much longer than *1a*. Setae *3b* and *3c* and *4c* slightly dilated, well ciliate. Cerotegument between the anterior and posterior sternal plates well granulate.

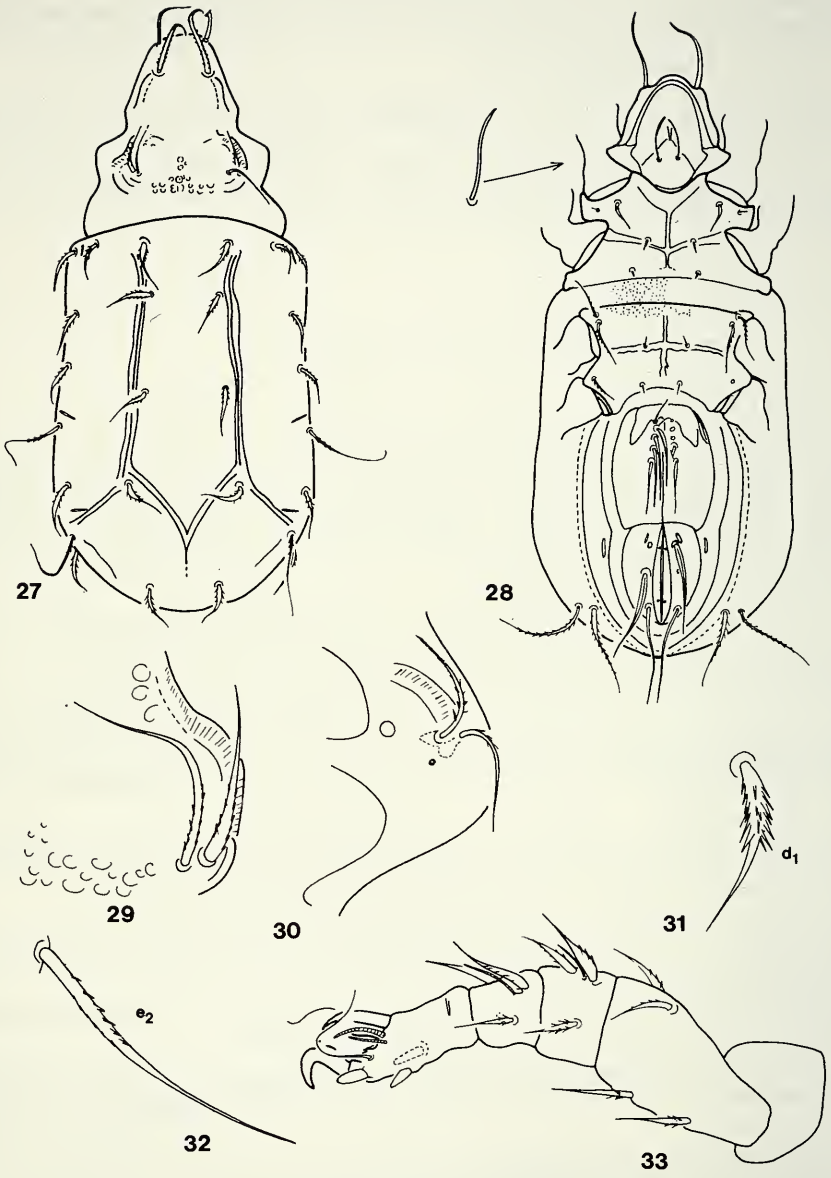
Anogenital region: Five (sometimes six) pairs of dilated and slightly pilose genital setae present. One or two minute anal setae hardly recognizable. All three pairs of adanal setae strong, ad_1 much longer but thinner than ad_2 and ad_3.

Legs: Solenidium v_1 comparatively short, simply bent anteriorly. Setae *d* and *l'* of tibia I and the setae of genu and femur well dilated and ciliate basally (Fig. 33). These setae also dilated on the other legs.

Material examined: Holotype: Sen-76/1; 8 paratypes: from the same sample. Holotype and 5 paratypes: MHNG, 3 paratypes (1158-PO-85): MNHM.

Remarks: The new species belongs to a species group (*"plumosus"-group*) that can be characterized by the dialted and ciliate prodorsal or notogastral setae.
These species are:

plumosus Willmann, 1929 – Java
robustus Hammer, 1958 – South America
keriensis Hammer, 1966 – New Zealand
neoplumosus Balogh & Mahunka, 1969 – South America
variosetosus Hammer, 1971 – Fiji
pachypilus Hammer, 1972 – Tahiti
ensifer Mahunka, 1982 – Ethiopia



FIGS 27-33.

Malaconothrus heterotrichus sp. n. – 27: dorsal side; 28: ventral side; 29: lateral part of prodorsum from dorsal view; 30: lateral part of prodorsum from lateral view; 31: seta d_1; 32: seta e_2; 33: leg I.

On the ground of the notogastral heterotrichy the new species stands nearest to *M. variosetosus*, however, it is distinguished from the latter by the very thick lamellar and interlamellar setae, by the sensillus, and by the shape of adanal and genital setae.

Graptoppia mussardi sp. n.

Measurements. – Length: 196-200 µm, width: 90-96 µm.

Prodorsum: Rostrum widely rounded, rostral setae arising on the dorsal surface, thicker and longer than the lamellar on interlamellar ones. Well developed costula present, narrowing basally. A convex transcostula present, but becoming thin medially. Three pairs of light spots present in the interlamellar region. Exobothridial setae thinner, but not shorter than interlamellar ones. Sensillus short, its head strongly, but asymmetrically clavate, with 10-11 lateral branches.

Notogaster: Elongate. Ten pairs of notogastral setae present. Setae *ta* minute, all others short, nearly equal in length, stick-shaped, some of them, in posteromarginal position, arising from small tubercles (Fig. 34).

Lateral part of podosoma: Pedotecta I small, II-III absent, discidium small, but sharply pointed and steeply projecting from the surface. Exobothridial region (Fig. 38) granulate.

Coxisternal region: Borders between the 1. and 2. epimeres hardly observable, sejugal borders wide (Figs 36-37). Epimeral surface with some polygonal fields. Epimeral setae short, setae *1c* originating far from pedotecta 1, setae *3c* and *4c* (!) arising from tubercles. Between epimeres 3 and also 4 a wide median field present.

Anogenital region: Anogenital setal formula 5-1-2-3, aggenital, adanal and anal setae nearly equal in length. Setae ad_1 in postanal, setae ad_3 in preanal position, the latter nearly in a transversal line along with the aggenital setae. Lyriffisure *iad* in adanal position.

Legs: All solenidia of tarsus I (Fig. 35) short, w_1 arising on a tubercle. Solenidium w_1 of tibia II also short and blunt, directed laterally (Fig. 39).

Material examined: Holotype: Sen-77/4; 1 paratype: Sen-77/1. Holotype: MHNG, paratype (1159-PO-85): MNHM.

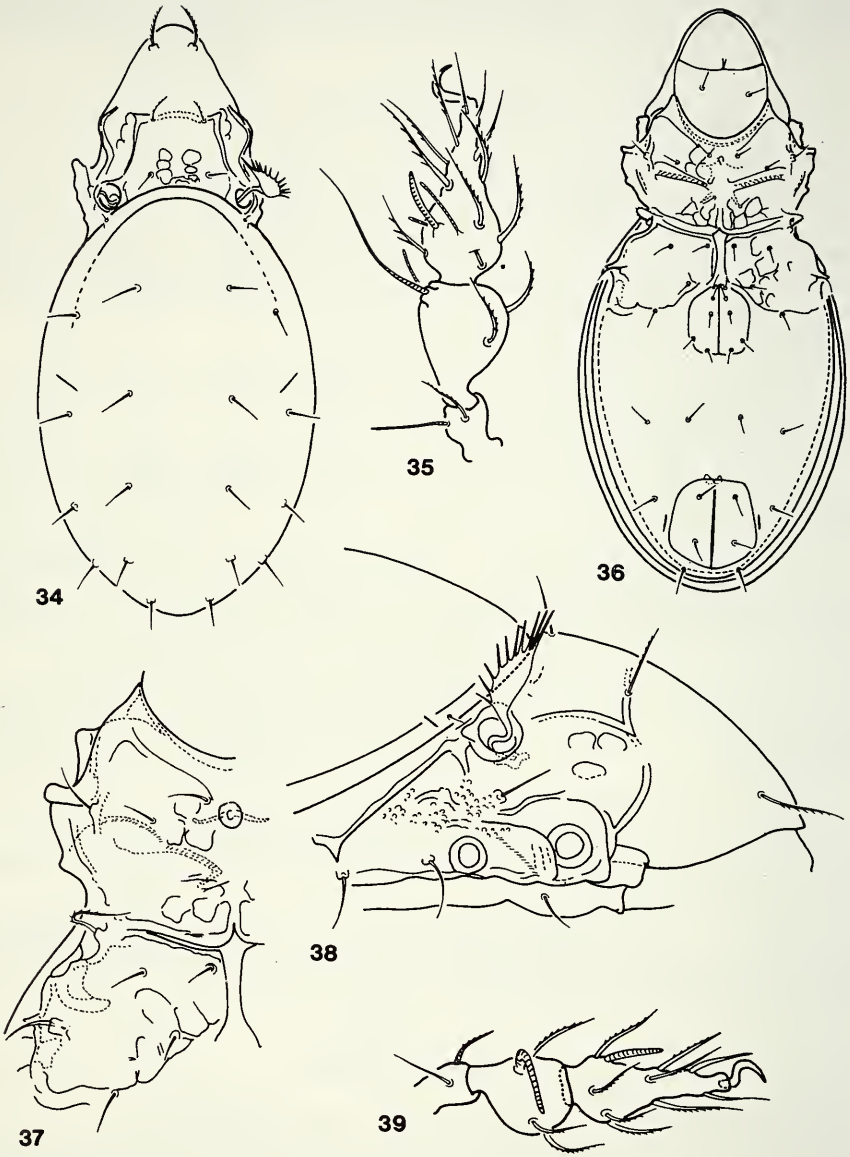
Remarks: The new species stands very near to *G. foveolata* (Paoli, 1908) and *G. africana* Mahunka, 1987. It is distinguished from both species by the presence of setae *ta* on the notogaster and by the number of lateral branches of the sensillus.

Insculptoppia crenata sp. n.

Measurements. – Length: 295-312 µm, width: 164-171 µm.

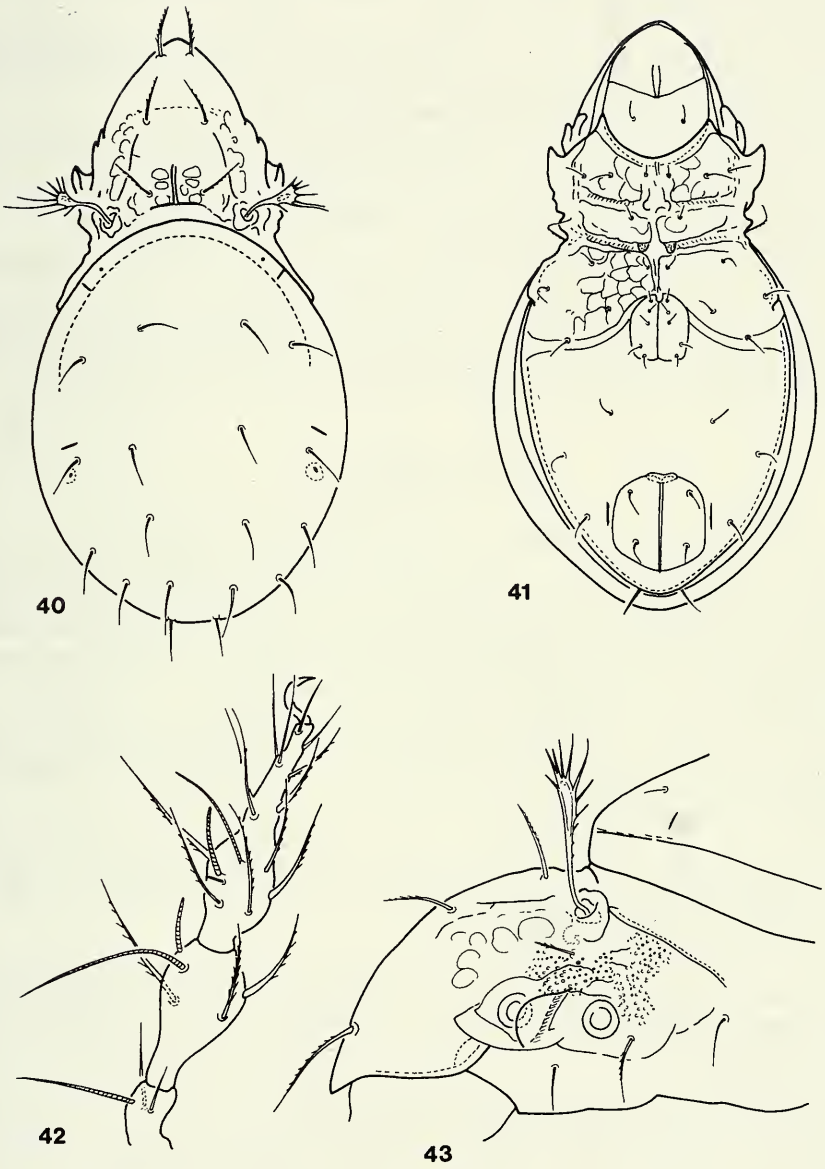
Prodorsum: Ratio of prodorsal setae: *ro>in>le>ex* (Fig. 43).All setae ciliate, but setae *ro* also slightly thicker than the ohters. Dorsal surface with a pair of sharp lines running from bothridium towards lamellar setae. Between interlamellar setae 3 (4) pairs of irregular spots and among them a well-visible, short, longitudinal lath (Fig. 40) present. Sensillus fusiform, unilaterally ciliate. Ciliae (or branches) different in length.

Notogaster: Nine pairs of short notogastral setae present, setae *ta* represented only by their alveoli.



FIGS 34-39.

Graptoppia mussardi sp. n. – 34: dorsal side; 35: leg I; 36: ventral side; 37: coxisternal region; 38: prodorsum from lateral view; 39: leg II.



FIGS 40-43.

Insculptoppia crenata sp. n. – 40 dorsal side; 41: ventral side; 42: leg I; 43: prodorsum from lateral view.

Lateral part of prodorsum: Surface well granulate. Pedoctecta 1 small, pedotecta 2 absent, discidium without sharp spur. Setae *1c* originating far from pedotecta 1.

Coxisternal region: Epimeral borders well observable. Sejugal borders with a pair of characteristic tubercles, directed backwards. Epimeral surface ornamented by polygonal network. Epimeral setae short and simple (Fig. 41).

Anogenital region: Anogenital setal formula: 5-1-2-3. All setae simple and short. Setae ad_3 originating in postanal position and directed slightly outwards.

Legs: Tibia of leg I (Fig. 42) without spur. Solenidium w_1 long, w_2 blunt, v_1 also blunt but v_2 filiform, much longer than v_1.

Material examined: Holotype: Sen-76/2; 2 paratypes: from the same sample. Holotype and 1 paratype: MHNG, 1 paratype (1160-PO-85): MNHM.

Remarks: The new species stands nearest to *I. fusiformis* (Wallwork, 1961) from Ghana, however, the latter has no median laths between the light spots of the interbothridial region and the head of sensillus is narrower than in the new species.

Karenella foveolata sp. n.

Measurements. – Length: 271-300 µm, width: 157-174 µm.

Prodorsum: Rostrum widely rounded, rostral setae arising laterally far from each other. All prodorsal setae simple, setiform, setae *in* minute, setae *ex* represented only by their alveoli. Between the interlamellar setae a characteristic formation present, which consists of one pair of short, longitudinal laths and between them two pairs of round spots. Sensillus long, its head asymmetrically clavate, barbed distally.

Notogaster: Its surface ornamented by large but shallow foveolae, their margin hardly observable, indistinct. Ten pairs of setae present, nine pairs of them characteristically widened basally (Fig. 44), and barbed distally, one pair (*ta*) minute, originating very near to lyrifissura *ia*.

Lateral part of podosoma: Exobothridial region granulate, some stronger rugae also observable (Fig. 47). Pedotecta 1 normal, discidium weakly developed, without sharp spur. Setae *4c* originating very far from the acetabulum of leg IV. Setae *1c* arising also on the epimeral surface (Fig. 45).

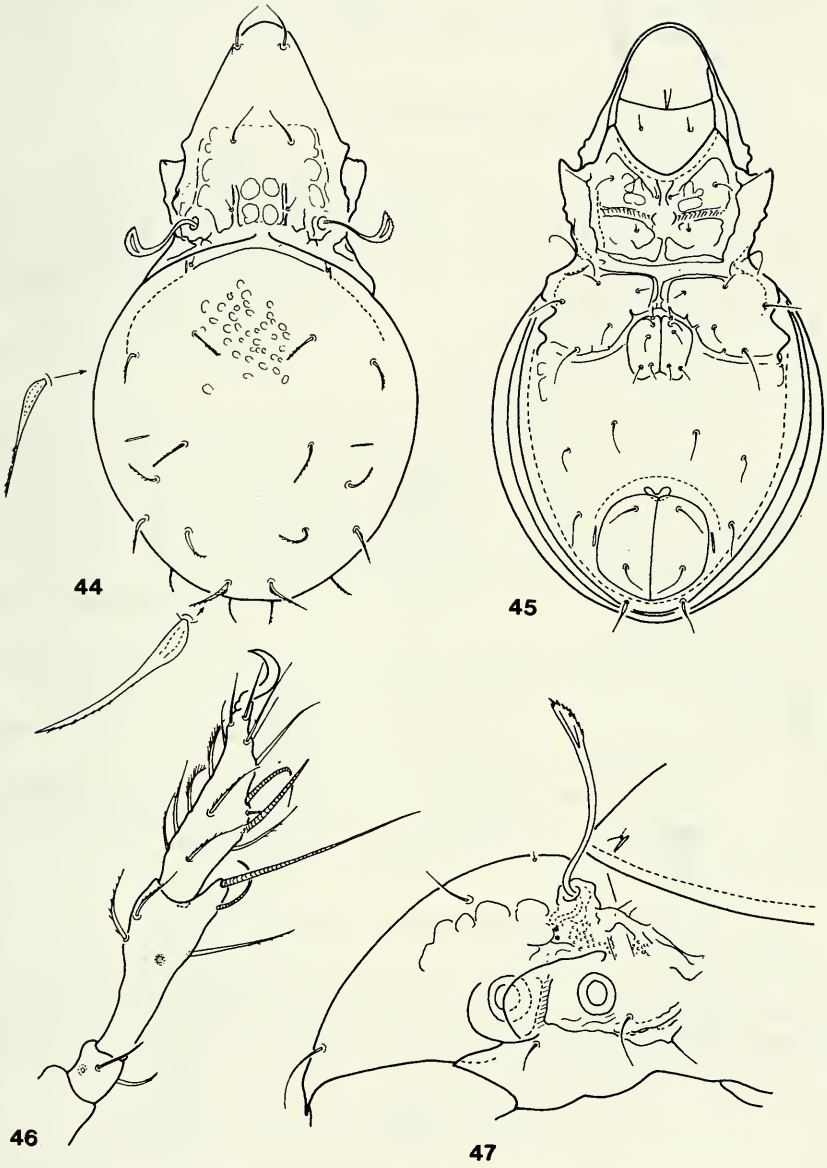
Coxisternal region: A strong sejugal band observable, other epimeral borders – with the exception of bo_4 – not or only partly observable. Epimeral surface ornamented by a few polygonal fields or spots. Epimeral setae different in length, but all thin and simple.

Anogenital region: Anogenital setal formula 5-1-2-3. Seate ad_1 like notogastral ones, dilated basally, all others thin and simple.

Legs: Tibia of leg I with long and strong spur dorsally, both solenidia arising on it (Fig. 46). All solenidia of tibia and tarsus of leg II blunt, directed forwards.

Material examined: Holotype: Sen-76/2; 1 paratype: from the same sample. Holotype: MHNG, 1 paratype (1161-PO-85): HNHM.

Remarks: The new species is well characterized by its notogastral sculpture and by the shape of its notogastral setae. On this around it may be well distinguishable from all related taxa. In my opinion *Karenella lanceosetoides* (Balogh, 1960) and the new species



FIGS 44-47.

Karenella foveolata sp. n. – 44: dorsal side; 45: ventral side; 46: leg I; 47: prodorsum from lateral view.

present transitional forms from *Karenella* Hammer, 1962 to *Corynoppia* Balogh, 1983, therefore, the latter probably will have to be synonymized with *Karenella*, and *Karenella* should be placed close to the *Stachyoppia – Striatoppia* group.

Multioppia calcarata sp. n.

Measurements. – Length: 271-302 µm, width: 147-158 µm.

Prodorsum: Rostrum widely rounded, rostral setae geniculate, originating near to each other on the drosal surface. In front of them a transversal lath present. Lamellar setae slightly shorter and thinner than interlamellar ones. Sensillus asymmetrically clavate, with 9-10 long branches and its peduncle with 7-8 short cilia on each side. Exobothridial region (Fig. 53) well granulate.

Notogaster: Twelve pairs of characteristic notogastral setae present (Fig. 48), setae *ta* reduced, their insertion also invisible.

Lateral part of podosoma: Pedotecta with a very long and strong spur anteriorly (Fig. 51). Pedotecta II small, discidium sharply pointed, slightly curved backwards.

Coxisternal region: All epimeral setae comparatively short, some of them ciliate. Setae *1c* originating far from pedotecta I. Epimeral surface ornamented by polygonal reticulation, epimeral borders in parts hardly observable. On the sejugal borders one pair of round tubercles (Fig. 49) present, directed posteriorly.

Anogenital region: All setae short and simple. Anogenital setal formula: 5-1-2-3. Lyrifissure *iad* long.

Legs: Tibia of leg I (Fig. 52) without tubercles. Solenidia w_1 and w_2 standing far from each other. Solenidium w_1 of leg II (Fig. 50) long, filiform.

Material examined: Holotype: Sen-77/2; 22 paratypes: from the same sample. Holotype and 14 paratypes: MHNG, 8 paratypes (1162-PO-85): MNHM.

Remarks: The new species is well characterized by the anterior spur of its pedotecta I and the completely reduced setae *ta*. On this ground it may be well distinguished from all heretofore known *Multioppia* Hammer, 1961 species.

Paroppia senegalensis (Mahunka, 1975) comb. nov.

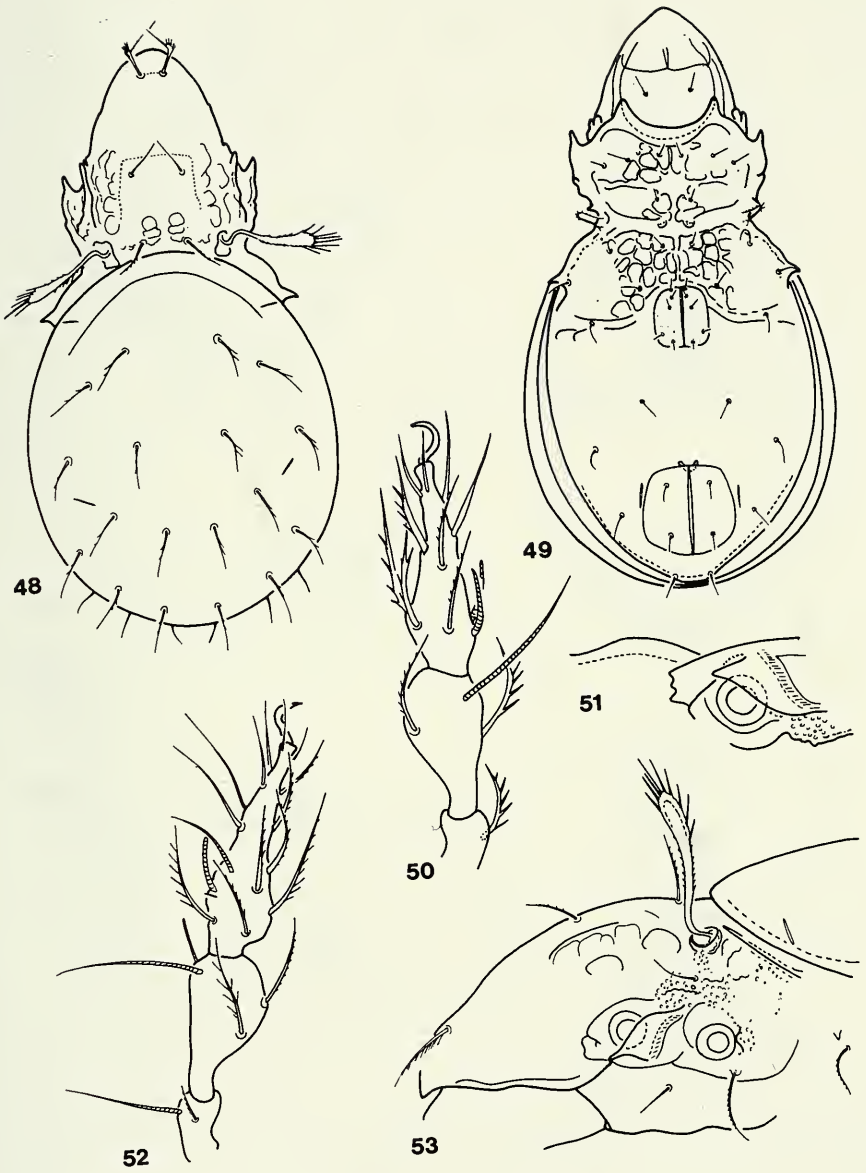
This species belongs without doubt to the genus *Paroppia* Hammer, 1968. On the ground of the newly examined specimens I give some complementary figures (Fig. 54-57). The original description is acceptable, but the prodorsal and notogastral setae are slightly more rigid than they have been figured (Mahunka, 1975: 289, fig.: 1-2).

Examined material: Se-72/1: 15 specimens, Se-72/2: 1 specimen, Se-72/3: 8 specimens, Sen-77/1: 2 specimens, Sen-77/2: 1 specimen, Sen-77/3: 5 specimens.

Uroppia hainardorum sp. n.

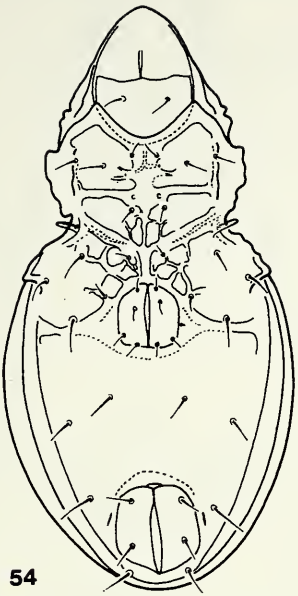
Measurements. – Length: 369-395 µm, width: 209-225 µm

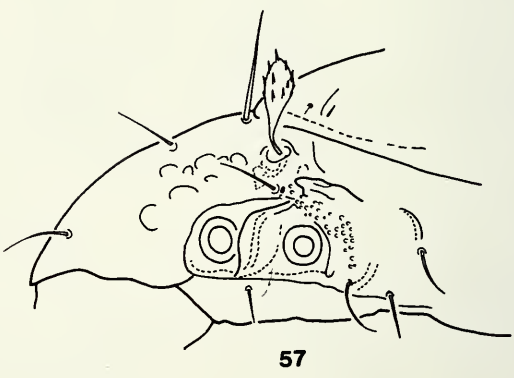
Prodorsum: Rostrum conical, rostral setae arising near to the rostral apex, close to each other, curved inwards. Lamellar and interlamellar setae similar, nearly equal



FIGS 48-53.

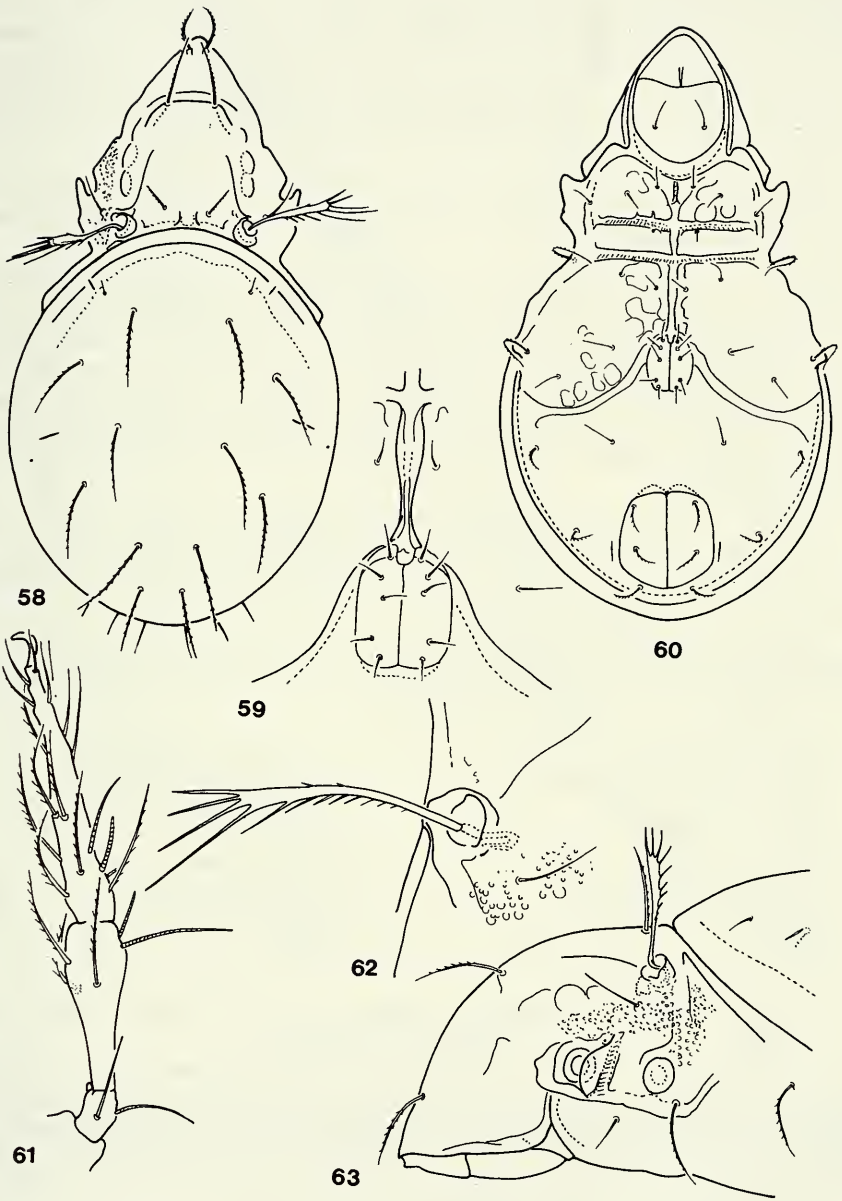
Multioppia calcarata sp. n. – 48: dorsal side ; 49: ventral side; 50: leg II; 51: pedotecta 1; 52: leg I; 53: prodorsum from lateral view.





FIGS 54-57.

Paroppia senegalensis (Mahunka, 1975) – 54: ventral side; 55: leg I; 56: leg II; 57: prodorsum from lateral view.



FIGS 58-63.

Uroppia hainardorum sp. n. – 58: dorsal side; 59: epimeral borders and genital plate; 60: ventral side; 61: leg I; 62: trichobothrium; 63: prodorsum from lateral view.

in length (Fig. 63). A strong transversal costula in front of lamellar setae and a sharp longitudinal line present, the latter running anteriorly from bothridium, slightly convergent. Between interlamellar setae some short laths present. Senillus (Fig. 62) gradually thickened, with long branches of various lengths. Exobothridial region strongly granulate.

Notogaster: Ten pairs of notogastral setae present, setae *ta* originating far from dorsosejugal suture, setae *p* standing near to each other. Setae *te* – r_3 well ciliate (Fig. 58).

Lateral part of prodorsum: Lateral margin of prodorsum bent characteristically posteriorly. Setae *1c* originating far from pedotecta 1 and much shorter than *3c* and *4c*. Discidium small.

Coxisternal region (Fig. 60): Apodemes and epimeral borders well observable, composing a dense network. Setae – with the exception of *3c* and *4c* – short and simple, the latter two pairs with long cilia. Epimeres ornamented by irregular spots.

Anogenital region: Genital plates (Fig. 59) hollowed out at their anterior median margin. Anogenital setal formula: 5-1-2-3. Genital and aggenital setae simple, thin, all others thicker and with strong cilia. Setae ad_3 originating far from ad_2, anteriorly, only slightly behind setae *ag*. Lyrifissure *iad* in adanal position, but near to the posterior corner of anal plates.

Legs: All tarsi (Fig. 61) gradually narrowed anteriorly, without a bulbiform basal part. Claws short, comparatively small. Tibia of leg I without process.

Material examined: Holotype; Sen-76/2; 1 paratype: from the same sample. Holotype: MHNG, paratype (1163-PO-85): HNHM.

Remarks: The new species stands very near to the type species of the genus *Uroppia* Balogh, 1983 [*U. acusiensis* (Wallwork, 1961)] described from Ghana. They differ from each other by the following characters:

U. acusiensis[1]

1. Smaller species: measurements: 312-341 x 175-206 µm
2. Setae *4b* ciliate
3. Setae ad_3 arising nearer to apodemes 4 than setae *ag*.
4. Lyrifissure *iad* in apoanal position.

U. hainardorum sp. n.

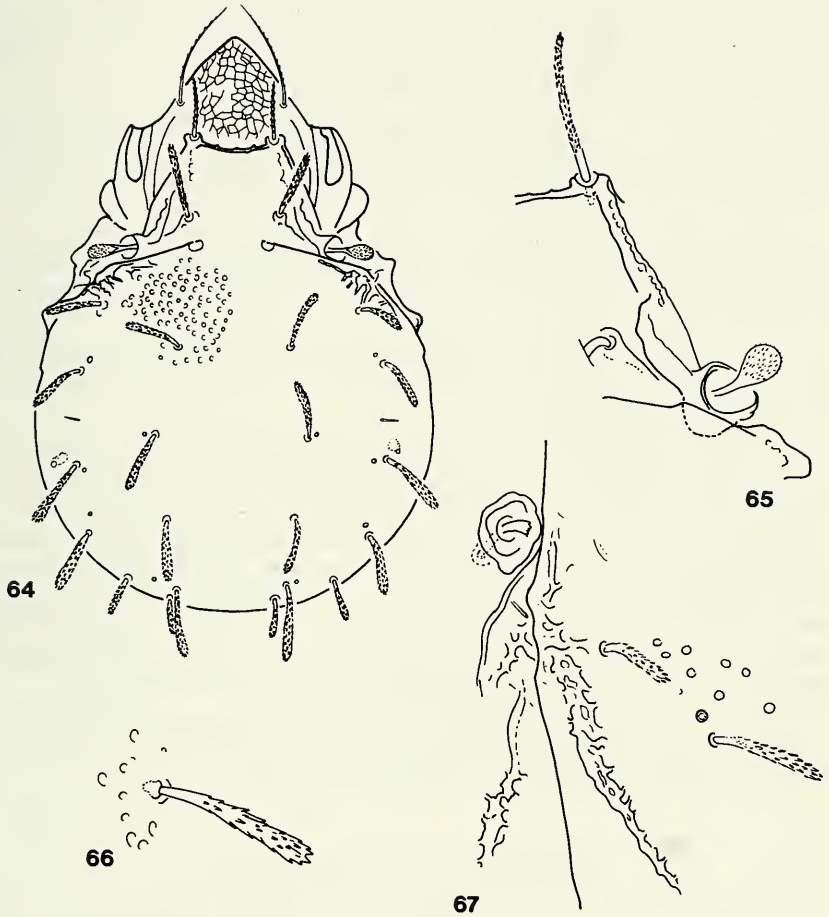
1. Bigger species: measurements: 369-395 x 209-225 µm
2. Setae *4b* smooth.
3. Setae ad_3 arising farther from apodemes 4 than setae *ag*.
4. Lyrifissure *iad* in adanal position.

Chaunoproctellus gen. n.

Diagnosis: Family *Chaunoproctidae*. Similar to *Chaunoproctus*. Lamellae with very large, wide cuspis, translamella narrow. Dorsosejugal suture interrupted medially. Ten pairs of notogastral setae and five pairs of pori present. Epimeral setal formula: 3-1-3-3. Anal and genital apertures originating far from each other, the distance being greater than the length of anal plates. Anogenital setal formula: 6-1-2-2. Lyriffisure *iad* in adanal position. All legs tridactylous.

Type species: *Chaunoproctellus rugosus* sp. n.

[1] Based on WALLWORK's description only.



FIGS 64-67.

Chaunoproctellus rugosus gen. n., sp. n. – 64: dorsal side; 65: lamellar region; 66: notogastral seta; 67: humeral part of notogaster.

R e m a r k s : The new taxon stands near to the genus *Chaunoproctus* Pearce, 1906 btu the latter has three pairs of adanal setae and its dorsosejugal suture is not interrupted medially.

Chaunoproctellus rugosus sp. n.

M e a s u r e m e n t s : – Length: 397-494 µm, width: 276-350 µm.

P r o d o r s u m : Rostrum conical. Rostral setae long, thin, arising on the cuspis of tutorium. Lamellae thick, of a complicate structure and sculpture (Fig. 65). Lamellar setae

arising on their cup-shaped cuspis, bacilliform, spiculate. Rostral region, before translamellae, ornamented by polygonal sculpture, interlamellar region smooth. Interlamellar setae also spiculate, slightly thicker than lamellar ones (Fig. 70). Bothridium protruding laterally, sensillus short, its head clavate and spiculate.

N o t o g a s t e r : A small humeral projection present, its surface and a longer posteriorly directed band (Fig. 67) rugose. Whole surface irregularly foveolate. Ten pairs of dilated notogastral setae (Fig. 64) present, setae ps_2 and ps_3 much shorter than the others. Five pairs of pori present, anterior one (*Pa*) longer than the others.

L a t e r a l p a r t o f p o d o s o m a : Pedotecta 1 an 2 well developed, its surface also polygonate. Among the lateral porose areae only the humeral one (*Ah*) visible, instead of the sublamellar one (*Al*) only a light spot visible. The whole surface of this region rugose.

C o x i s t e r n a l r e g i o n (Fig. 68): Only a short part of apodeme 1 and the sejugal one is visible. Epimeral borders also absent. All setae thin, comparatively long, surface ornamented by irregular spots.

A n o g e n i t a l r e g i o n : Surface foveolate, but the anterior part, near to the genital aperture, with some irregular spots, similar to the epimeral surface. Anogenital setal formula: 6-1-2-2, all setae short and thin, setae g_6 characteristically bent inwards.

L e g s : All legs tridactylous. All trochanters and femora finely rugose or striolate, the other segments smooth. The third and fourth tibia very long, therefore the posterior two pairs of legs much longer than the anterior pairs. Porose areae visible. Tibia of leg I with long process (Fig. 69), bearing solenidium φ_1, φ_2 originating also on a small tubercle.

M a t e r i a l e x a m i n e d : Holotype: Sen-77/2: 1 paratype: from the same sample, 1 paratype: Se-72/2. Holotype and 1 paratype: MHNG, 1 paratype (1164-PO-85): HNHM.

R e m a r k s : In addition to the generic characters, the new species may also be well separated from the other species belonging to the family *Chaunoproctidae* by the rugose humeral projection and the shape of lamellae.

Baobabula mussardi Mahunka, 1975

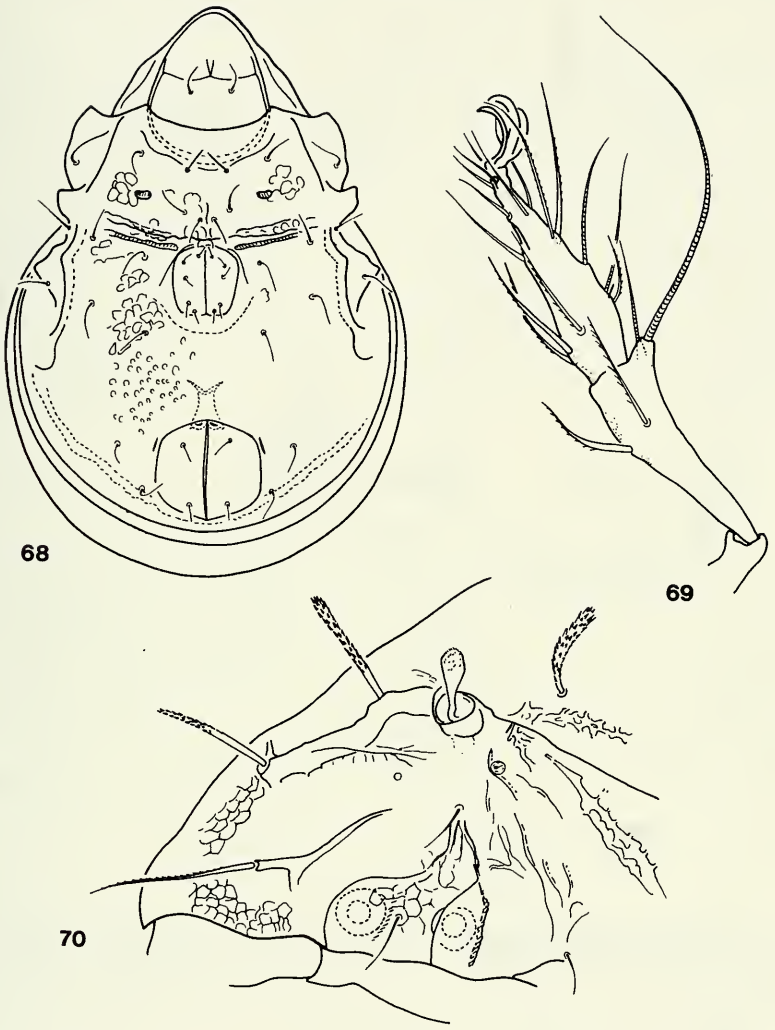
In the original description of the genus I erroneously referred to the areae porosae as respiratory organs. I must correct this: It has four pairs of large sacculi. I remarked that the "sacculi" are very hardly observable, because the "sacks" are mostly round and have a struture like pori (connections of tracheae?) well visible in them (Figs 71-72).

In spite of this change the validity of the genus is unambiguous, but it might belong to the alliance of *Constrictobates* Balogh et Mahunka, 1966.

Perscheloribates minimus sp. n.

M e a s u r e m e n t s . – Length: 239-281 μm, width: 135-177 μm.

P r o d o r s u m : Rostrum obtuse, rostral setae arising far from each other, in marginal position. Lamellae well developed, a pair of short, bent interlamellar lines present, prelamellae short, not reaching to the insertion of rostral setae (Fig. 75). A transversal band observable behind the rostral setae. Sensillus large, directed outwards, clavate, its head rarely spinose.



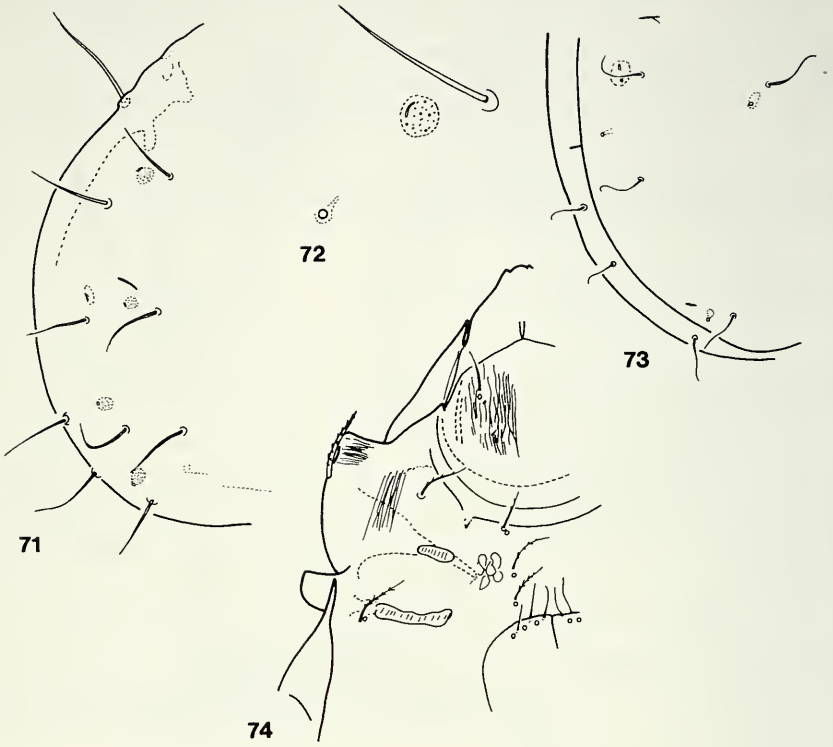
FIGS 68-70.

Chaunoproctellus rugosus gen. g. n., sp. n. – 68: ventral side; 69: leg I; 70: prodorsum from lateral view.

N o t o g a s t e r : Dorsosejugal suture arched. Notogastral setae reduced, only setae p_1 visible, all others represented by their alveoli. Four pairs of minute sacculi present.

L a t e r a l p a r t o f p o d o s o m a : As shown in (Fig. 77).

C o x i s t e r n a l r e g i o n : Some spots on the epimeral surface visible. Epimeral setae simple, setae *1c* arising on the outer border of epimer 1.



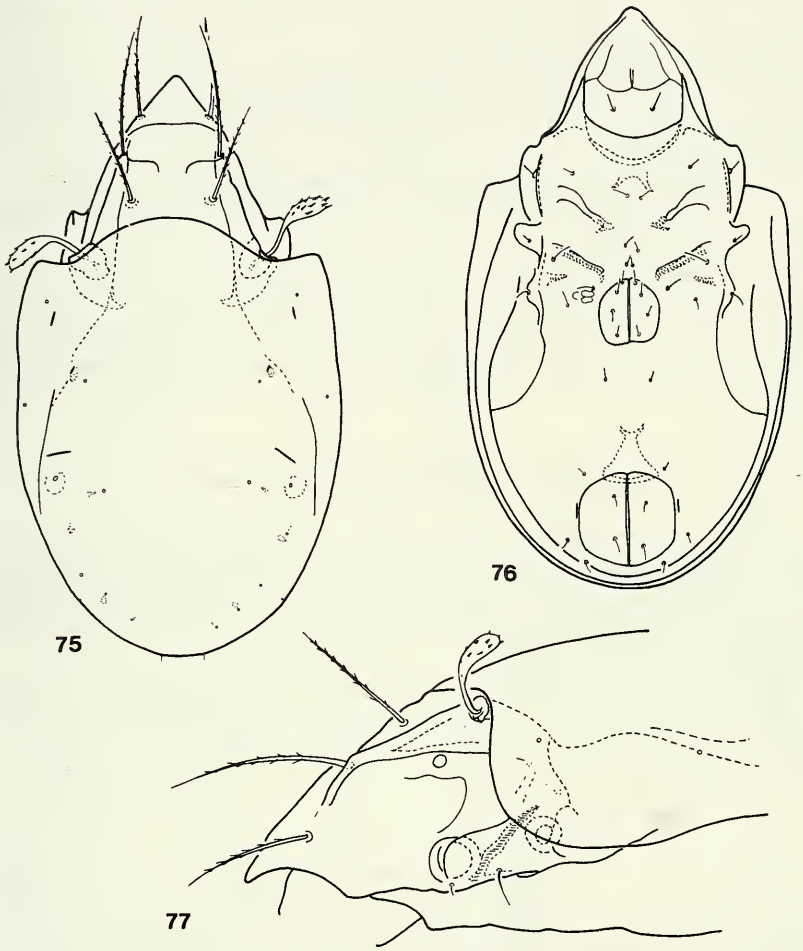
FIGS 71-74.

Baobabula mussardi Mahunka, 1975 – 71: notogaster; 72: sacculi *Sh* and seta *te* *Africacarus calcaratus* Wallwork, 1965 – 73: posterior part of notogaster; 74: coxisternal region.

Anogenital region: All setae short and thin, no essential difference among their lengths (Fig. 76).

Material examined: Holotype: Se-72/2; 6 paratypes: from the same sample. Holotype and 4 paratypes: MHNG, 2 paratypes (1165-PO-85): HNHM.

Remarks: The difference among the genera *Perscheloribates* Hammer, 1973, *Ischeloribates* Corpus-Raros, 1980 and some other related genera is rather uncertain, however, the new species strongly resembles *Perscheloribates clavatus* Hammer, 1973, therefore I placed it in this genus. It differs from the type species by the presence of setae p_1, the short prelamellae and the straight transversal line behind the rostral setae (the latter is well arched in *clavatus*).



FIGS 75-77.

Perscheloribates minimus sp. n. – 75: dorsal side; 76: ventral side; 77: prodorsum from lateral view.

Scheloribates exiguus sp. n.

Measurements. – Length: 394-420 µm, width: 204-227 µm.

Prodorsum: Rostrum apex truncate. Ratio of prodorsal setae *ro<le<in*. Setae *ro* and *le* arising on the lamellae or prelamellae. Lamellae and prelamellae well developed, a thin but well-observable, bent translamella also present (Fig. 78). Its median part with a characteristic thickening. Sensillus (Fig. 79) clavate.

Notogaster: Ten pairs of filiform notogastral setae and four pairs of sacculi present. All sacculi elongate, with slit-like opening (Fig. 82).

Lateral part of podosoma: As shown as in (Fig. 83). Pedotecta I ornamented by some longitudinal wrinkles.

Coxisternal region: Apodemes well developed, ap_2, *ap. sej.* and ap_3 comparatively long. Epimeral borders not observable. Epimeral surface with polygonal ornamentation (Fig. 80).

Anogenital region: Without any sculpture. Anogenital setal formula: 4-1-2-3.

Legs: All legs tridactylous. Femur of leg II much wider than that of the other legs (Fig. 81).

Material examined: Holotype: Se-76/3; 22 paratypes: from the same sample. Holotype and 14 paratypes: MHNG, 8 paratypes (1166-PO-85): HNHM.

Remarks: The new species is well characterized by its translamella. On this ground it may be distinguished from all heretofore known related *Scheloribates* species.

Africacarus calcaratus Wallwork, 1965

This is the second collecting locality of the species described from Tchad. The Senegalian specimens may well be indentical with the original description and figures. But Wallwork did not mention the sculpture of the mentum and the epimeral region (Fig. 74), and neither did he depict the genal teeth. The long and strong setae *3c* in Wallwork's figures might be a misinterpretation.

The respiratory system consists of sacculi, *Sa* and S_1 well visible, S_2 and S_3 originating on the posterolateral margin and hardly observable (Fig. 73).

Material examined: Sen-77/3: 2 specimens.

Allogalumna sinornata sp. n.

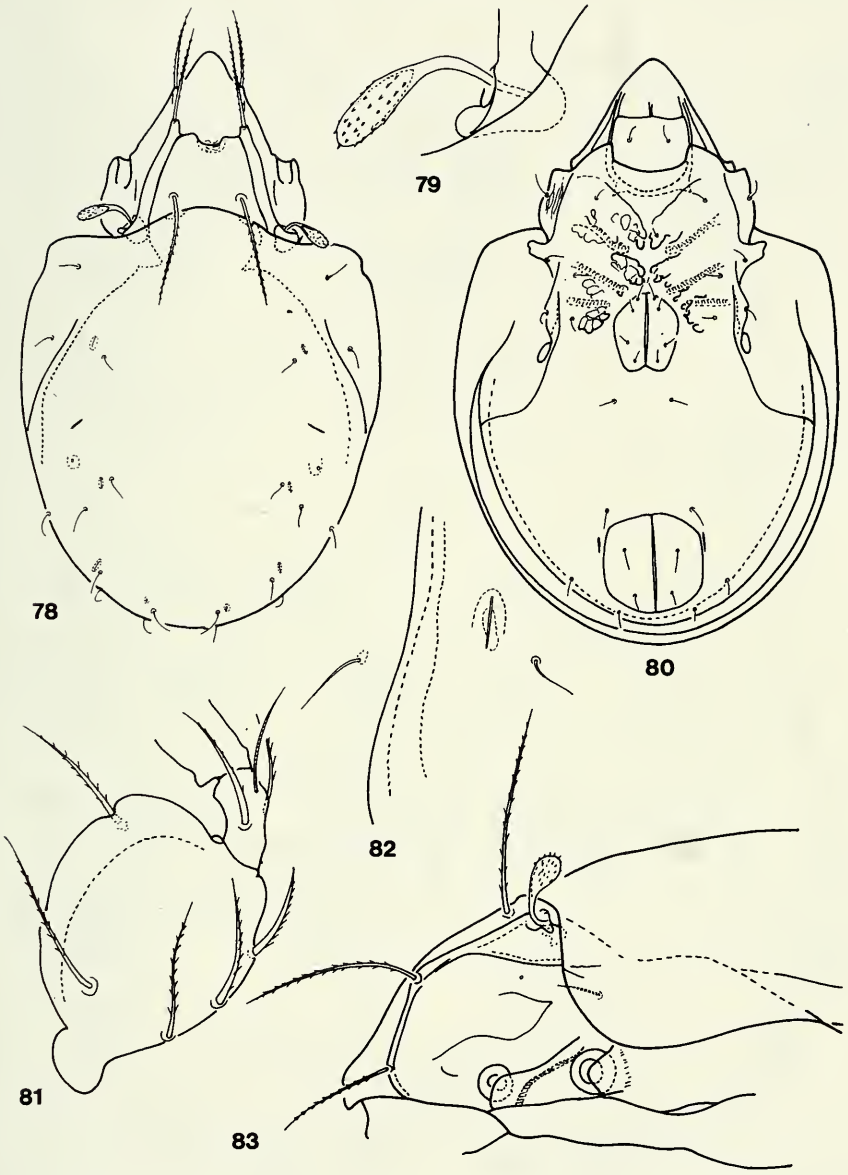
Measurements. – Length: 281-306 µm, width: 226-242 µm.

Prodorsum: Rostral part of prodorsum nearly semicircular in dorsal view. Rostral and lamellar setae very thin, but longer than the minute interlamellar ones. Sensillus asymmetrically fusiform, directed outwards. Sublamellar areae porosae very large (Fig. 85).

Notogaster: Dorsosejugal suture absent medially. Four pairs of large areae porosae present, among them *Aa* very large and round (Fig. 84). One median porus present, ten pairs of large alveoli also well visible.

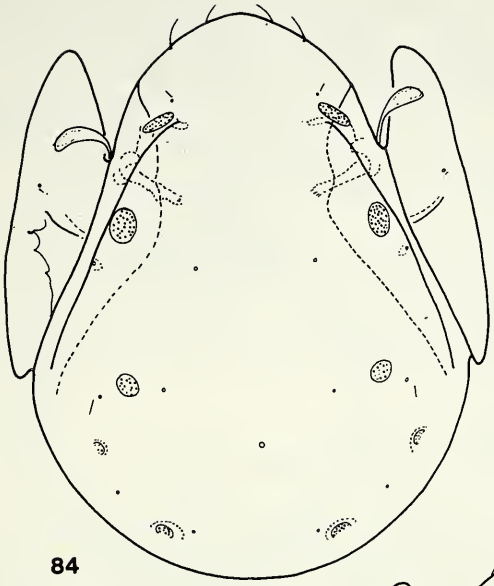
Coxisternal region: Three pairs of apodemes observable, they are nearly equal in length, *ap. sej.* and ap_3 connected with each other. Epimeral setae very short (Fig. 86).

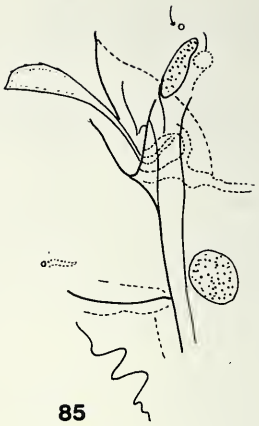
Anogenital region: All setae very short, sometimes hardly recognizable, no essential difference among their lengths.

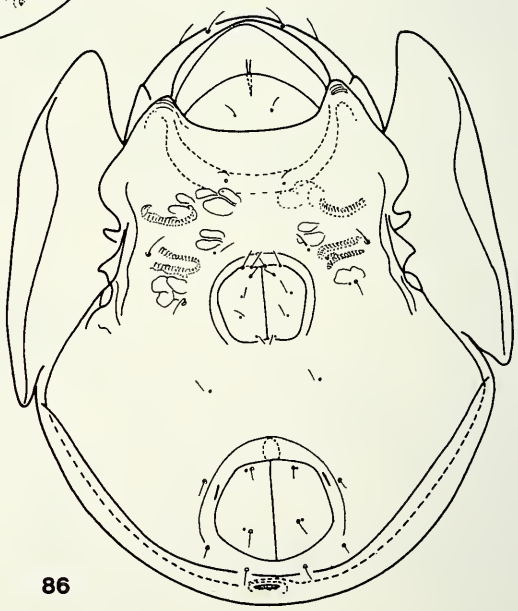


FIGS 78-83.

Scheloribates exiguus sp. n. – 78: dorsal side; 79: trichobothrium; 80: ventral side; 81: femur of leg II; 82: sacculi *sa*; 83: prodorsum from lateral view.

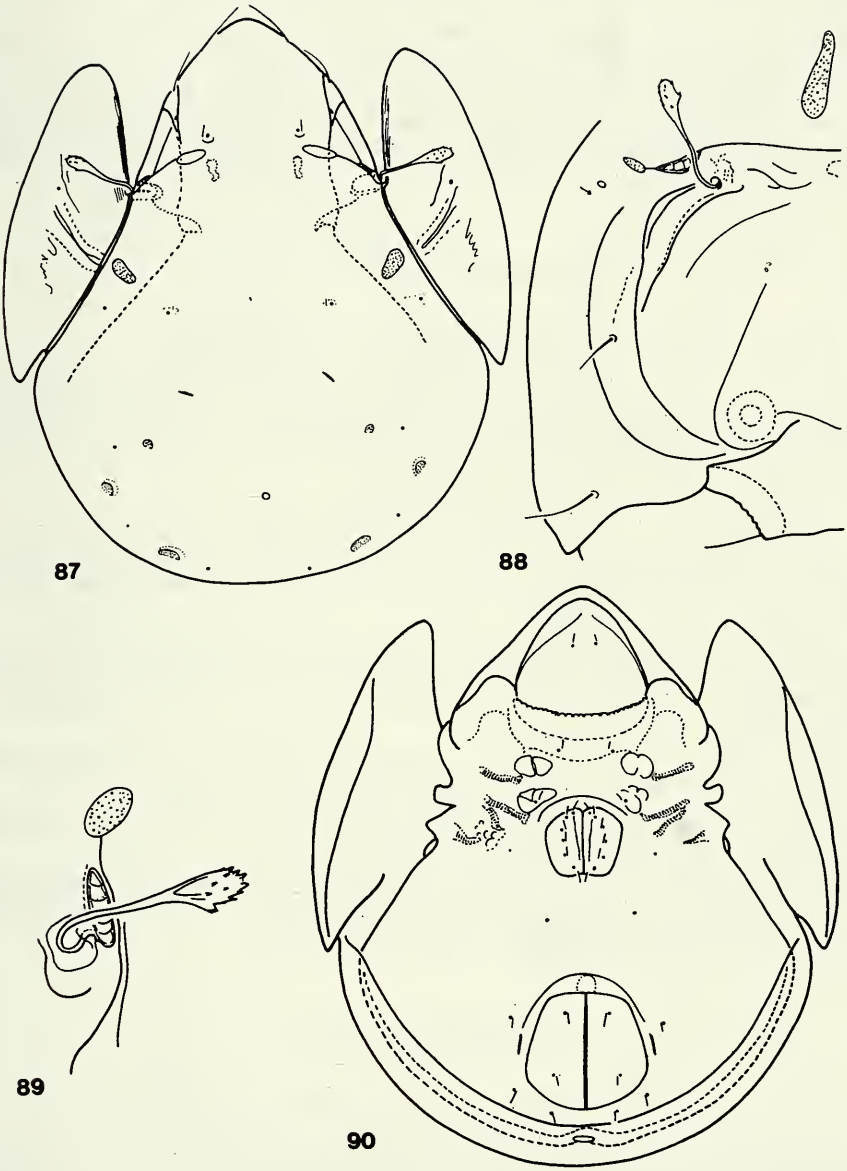






FIGS 84-86.

Allogalumna sinornata sp. n. – 84: dorsal side; 85: trichobothrium; 86: ventral side.



FIGS 87-90.

Galumna coronata sp. n. – 87: dorsal side; 88: prodorsum from lateral view; 89: trichobothrium; 90: ventral side.

Anogenital region: All setae very short, only their insertion points well visible.

Material examined: Holotype: Se-72/2; 7 paratypes: from the same sample. Holotype and 4 paratypes; MHNG, 3 paratypes (1167-PO-85): HNHM.

Remarks: The new species stands very near to *A. margaritifera* Balogh, 1960, however, the latter has a well observable ornamentation: like string of pearls along the dorsosejugal suture. Its body is smaller (261-273 x 198-208 μm) and its sensillus slightly larger and broader than in the new species.

Galumna coronata sp. n.

Measurements. – Length: 591-616 μm, width: 461-494 μm.

Prodorsum: Rostrum widely rounded in dorsal view, rostral setae longer than lamellar ones, but interlamellar setae shorter than both other pairs. Lamellar and sublamellar lines (Fig. 88) well observable. Sensillus (Fig. 89) long, clavate, on its head a characteristic "digitiform process" visible, other surface rarely spiculate. A hollow near to the bothridium, divided by some transversals crests.

Notogaster: Dorsosejugal suture absent medially. Ten pairs of alveoli and four pairs of areae porosae present (Fig. 87). Among the latter ones *Aa* elongate, slightly widened to pteromorphae. Surface of pteromorphae with some longitudinal lines along the inner margin.

Coxisternal region: Anterior margin ornamented by a small semicircular formation (Fig. 90). Sejugal and third apodemes connected laterally. Some large light spots present in this region. All setae (epimeral setal formula: 1-0-2-1) minute, setae *3c* and *4c* not visible.

Anogenital region: Genital plates medially with longitudinal line. Anogenital setal formula: 6-1-2-3. One large area porosa postanalis present.

Material examined: Holotype: Se-72/2; 4 paratypes: from the same sample. Holotype and 2 paratypes: MHNG, 2 paratypes (1168-PO-85): HNHM.

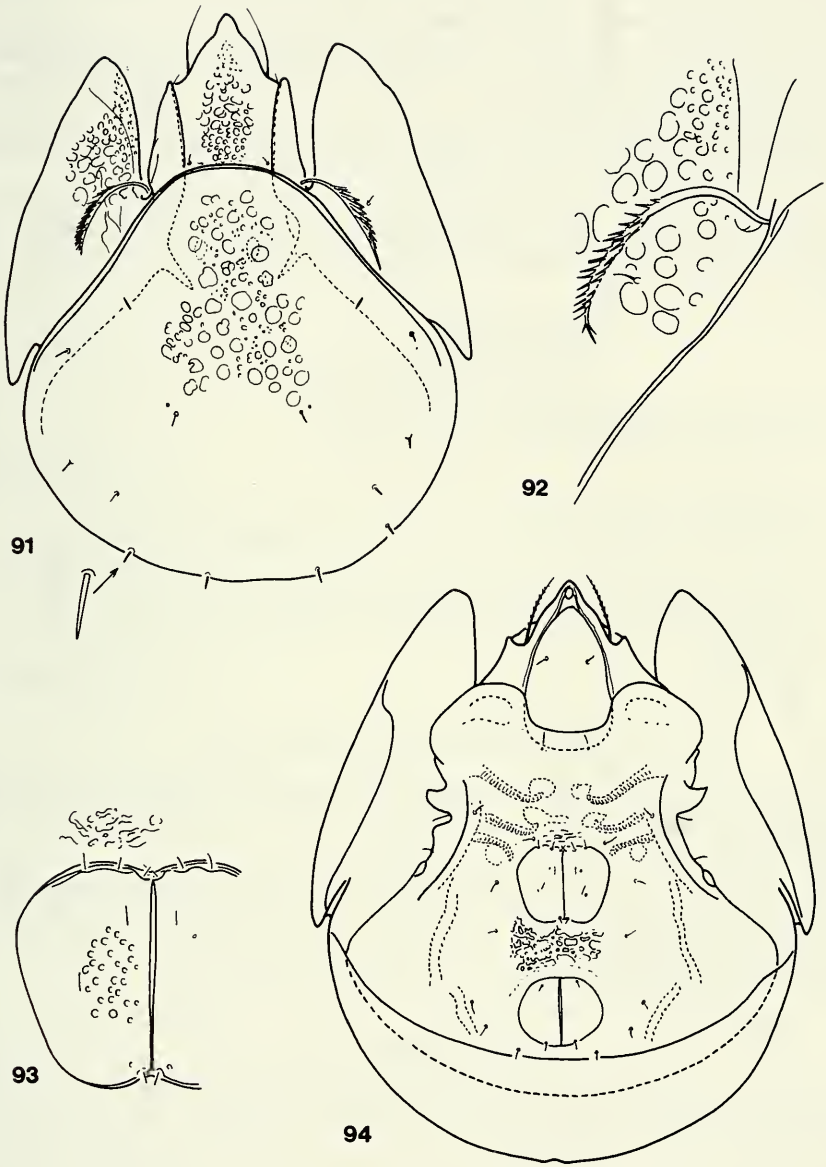
Remarks: The new species is well characterized by the ornamented anterior margin of the coxisternal region and the characteristic digitifrom process of the sensillus. On this ground it is well distinguishable from all related taxa.

Galumnella apiculata sp. n.

Measurements. – Length: 374-390 μm, width: 314-336 μm.

Prodorsum: Rostral apex sharply pointed, rostral setae long, reaching out to rostral apex. Prodorsal surface with large areolae medially, and with smaller ones basally. Interlamellar setae minute. Sensillus slightly dilated, with long cilia arranged in two rows (Fig. 91).

Notogaster: Whole surface ornamented by very large and among them much smaller alveoli (Fig. 95). Notogastral setae spiniform. Surface of pteromorphae differs from that of the notogastral one, its anterior margin punctate and gradually passing over to foveolae and alveoli (Fig. 92).



FIGS 91-94.

Galumnella apiculata sp. n. – 91: dorsal side; 92: trichobothrium; 93: genital plates; 94: ventral side.

Coxisternal region: Mentum, anterior and median part of epimeral surface densely punctate or foveolate, in front of the genital aperture also some rugae observable. Epimeral setae (1-0-3-2) comparatively long.

Anogenital region: Ventral plate, around the genital and anal apertures, rugulose and foveolate, laterally and posteriorly only foveolate (Fig. 94). Surface of genital plates as shown in Fig. 93.

Material examined: Holotype: Sen-76/1; 1 paratype: from the same sample. Holotype: MHNG, paratype (1169-PO-85): HNHM.

Remarks: The new species belongs to the "*areolata*"-group, which is characterized by the alveolate, foveolate and/or punctulate surface of prodorsum and notogaster, ribs or wrinkles dorsally not observable. The following species belong to this group:

apiculata sp. n.
areolata Balogh, 1960[1]
subareolata Mahunka, 1969[2]

They are well distinguishable by the following key:

1 (2) Prodorsal surface not alveolate, only punctate
areolata Balogh, 1960
2 (1) Prodorsal surface alveolate.
3 (4) The whole notogastral surface equally alveolate. Anogenital region rugose
apiculata sp. n.
4 (3) The notogastral surface unequally alveolate, larger alveoli anteriorly and laterally, much smaller ones medially (Fig. 95). Anogenital region (Fig. 98) foveolate
subareolata Mahunka, 1969

Galumnella subareolata Mahunka, 1969

Dorsal side (Fig. 95): Rostral setae long, but not reaching to rostral apex. Pteromophae punctate anteriorly and marginally, on the inner surface gradually enlarged foveolae and alveoli observable.

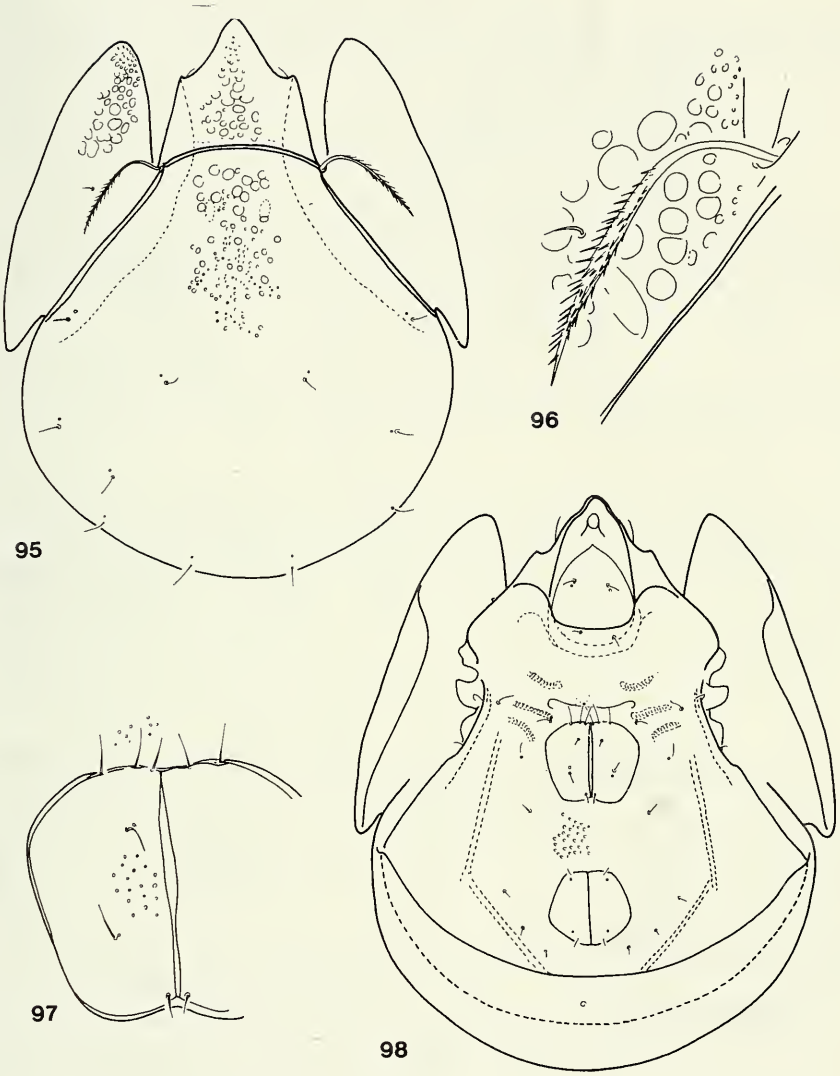
Ventral side (Fig. 98): Epimeral surface sparsely, anogenital region densely foveolate. Epimeral setal formula: 1-0-3-2; all these setae short and thin, hardly observable. Genital and anal plates covered by secretion granules, the surface (Fig. 97) foveolate. Anogenital setal formula: 6-1-2-3; these all setae short.

Trichogalumnella gen. n.

Diagnosis: Family *Galumnellidae*. Dorsal characters similar to *Galumnella* Berlese, 1916. Epimeral neotrichy present, epimeral setal formula: 10-4-5-4 (5). Whole

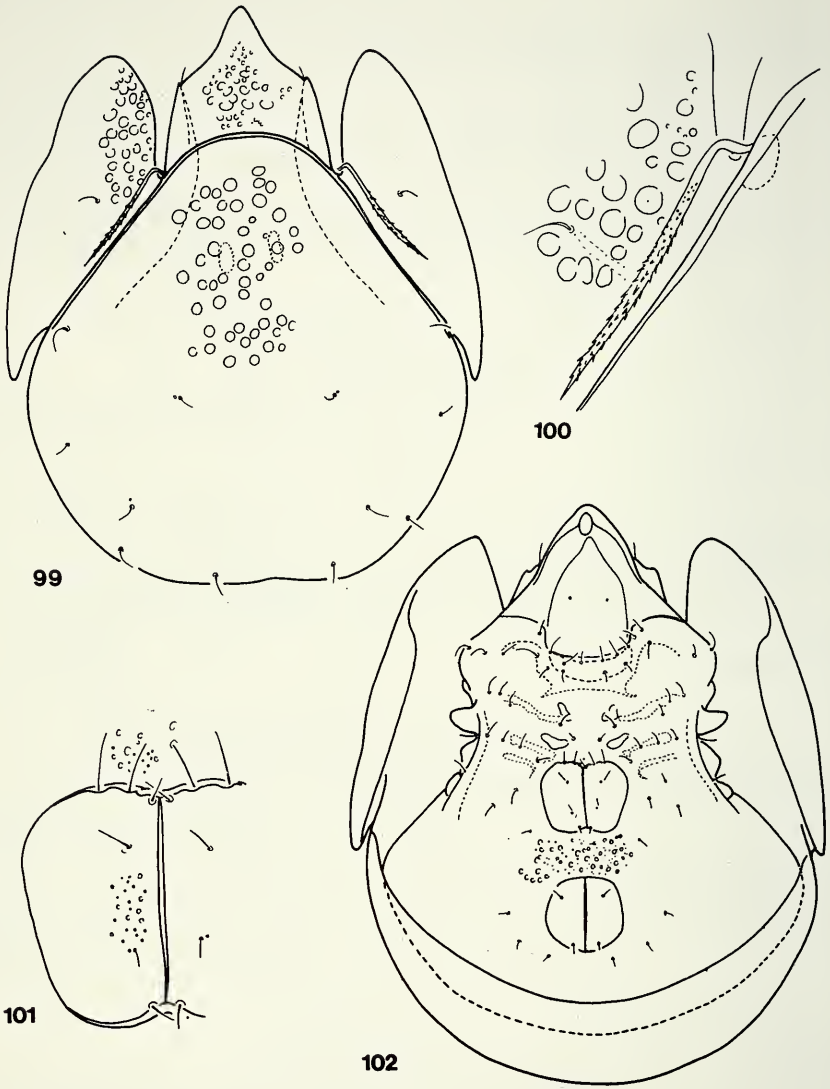
[1] I have published it from Rhodesia (Mahunka 1974), without comparing it to the type material, though the description of Balogh (1960) was too short and no data were given regarding to the ventral characters. Describing the new species I re-examined the Rhodesian material and found that these specimens are well distinguishable from the other *Galumnella* species; they represent a new species for which the establishment of a new genus is necessary.

[2] The original description was insufficient and the ventral side was not figured. On the ground of the examination of the type series I give a complementary description and some new figures.



FIGS 95-98.

Galumnella subareolata Mahunka, 1969 – 95: dorsal side; 96: trichobothrium; 97: genital plates; 98: ventral side.



FIGS 99-102.

Trichogalumnella hauseri gen. n., sp. n. – 99: dorsal side; 100: trichobothrium; 101: genital plates; 102: ventral side.

surface distinctly ornamented by alveoli or foveolae. Anogenital setal formula: 6-1-2-3. Lyrifissure *iad* absent. All legs tridactylous.

Type species: *Trichogalumnella hauseri* sp. n.

Remarks: On the ground of the epimeral neotrichy it differs from the other *Galumnella* species.

Trichogalumnella hauseri sp. n.

Measurements. – Length: 463-479 µm, width: 354-375 µm.

Prodorsum: Rostrum wide, without sharply pointed apex. Rostral setae very short, not longer than lamellar ones. Surface punctate anteriorly, foveolate and alveolate medially and basally. Sensillus (Fig. 100) reclinate, spinulose all around.

Notogaster: Whole surface (Fig. 99), even pteromorphae, alveolate, no punctate or punctulate area marginally. Notogastral setae setiform.

Coxisternal region: Mentum punctate, epimeres punctulate and punctate anteriorly and also alveolate medially and laterally. Epimeral setae thin and long (Fig. 102).

Anogenital region: Surface rarely alveolate. Genital and anal plates more densely foveolate. Genitel setae (Fig. 101) comparatively long.

Material examined: Holotype: Rho-69/1; 1 paratype: from the same sample. Holotype: MHNG, paratype (1170-PO-85): HNHM.

Remarks: See the remarks after the generic diagnosis.

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